JOINT FORCE QUARTERLY

JFQ

RMA Essay Contest

Interservice Competition

NATO, EUROPEAN SECURITY, AND BEYOND

Military Support to The Nation

The Son Tay Raid

Spring 97

A PROFESSIONAL MILITARY JOURNAL

Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.

—Guilio Douhet

JFQ

A Word from the **Chairman**

Eight years ago, as the Berlin Wall crumbled and the Cold War began to fade, two themes dominated media reports about Europe. First, many pundits argued that while our hearts might remain in Europe our central strategic and economic interests would lie elsewhere in the future. For some, our focus would be primarily on the Middle East, for others on Latin America, and for still others on the Asia-Pacific region. But most agreed that Europe's criticality had waned.

Second, other observers predicted that the North Atlantic Treaty Organization (NATO), absent a new overwhelming threat, would wither away or disappear. Their reasoning was simple: no threat, no alliance; no Warsaw Pact, no NATO.

But three Presidents knew better. While recognizing the growing importance of other regions, the United States chose not to turn its back on Europe or the Alliance. Indeed, as this issue of *JFQ* goes to press, heads of state of Alliance nations are about to meet to determine which of the many candidates will become new members of NATO.

The future value of the Alliance has to be calculated in light of its past accomplishments. In testament to its influence, Secretary of State Madeleine Albright has said:

NATO has always been more than a defensive shield. It was the roof over our heads when we rebuilt postwar Europe. It was the floor on which the first structures of European unity were laid. It was the door through which one time adversaries were welcomed into our family of democracies. And because of its strength and the courage of its members, it has been a mighty deterrent to aggression.

For nearly fifty years NATO's successes have been phenomenal; and they constitute a major reason why it remains a powerful force for peace and security:

- NATO has been essential to maintaining the transatlantic link, the mechanism which was so vital to deterrence during four decades and which today keeps the West united on security issues
- NATO's consultative mechanisms have been a positive force for stability on the Continent and were central to the solution of bilateral problems among its members
- NATO forces, policies, and procedures proved to be an essential and irreplaceable foundation for the coalition's success in Operation Desert Storm
- NATO forces from 15 allied nations—backed by 22 other countries, including Russia—are keeping order in Bosnia-Herzegovina today, a peace brought about by the force of NATO arms.

In the future, Europe will remain a center of wealth, democracy, and power. For the United States, it will remain a region of vital interest. According to our national security strategy, "Our objective in Europe is to complete the construction of a truly integrated, democratic, and secure Europe with a democratic Russia as a full participant." This, of course, is what we started out to accomplish fifty years ago when we launched the Marshall Plan and created NATO.

DOD (R.D. Ward)

During a break in the international meeting on Bosnia in July 1995, General George A. Joulwan, Supreme Allied Commander Europe, reviews draft U.S. position statement with the Chairman.

The new strategic environment in Europe has caused the United States to change its orientation from deterrence of war to shaping the environment to work against instability and the conditions that cause war. While we withdrew two-thirds of our Cold War force, we remain committed to the continuing deployment of some 100,000 troops in theater. Trade with Europe, of course, has taken care of itself, doubling in value over the past decade.

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The cover shows marines conducting sensor emplacement mission during Advance Warfighting Experiment at 29 Palms (U.S. Marine Corps/Christopher S. Cline). The front inside features Russian cruiser *Pilkiy* off the port beam of *USS America* in the Mediterranean (U.S. Navy/David Carter), American marines and Moldovan soldiers maneuvering, Cooperative Osprey '96 (982d Signal Company/M.A. Jones), Turkish officer using ground vehicular laser locator designator at Camp Dobol, Bosnia (55th Signal Company, Combat Camera/Angel Clemons), and closeup of B–2 bomber (U.S. Air Force). The table of contents shows *USS Mitscher* in the North Atlantic (U.S. Navy/Jacob L. Hollingsworth). The back inside cover captures F–16C at Azaraq air base in Jordan (U.S. Air Force/Paul R. Caron). The back cover displays *USS Scranton* surfacing with *USS George Washington* in background to support Southern Watch (U.S. Navy/Jim Vidrine), marines arriving in Thailand for Cobra Gold '97 (Joint Combat Camera Center/Jacqueline Richardson), AH–64D during Advanced Warfighting Experiment at Fort Irwin (28th Public Affairs Detachment/William Cronk), and C–17 (U.S. Air Force/Ken Hackman).

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Joint Force Quarterly

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A PROFESSIONAL MILITARY JOURNAL

A WORD FROM THE CHAIRMAN

(continued from page 1)

NATO has also adapted to meet new conditions. It changed its mission, altered its organization, and will soon expand its membership. At the same time, not wishing to redivide Europe, NATO has improved its relations with Russia. With the Founding Act, signed earlier this year, the Alliance has created a solid basis for future relations with Russia. NATO has also widened its influence through the Partnership for Peace (PFP) program, which includes 27 nations. In turn, PFP has created the groundwork for better interoperability and more effective peacekeeping.

I recently visited Cooperative Nugget '97, the third U.S.-hosted training exercise oriented on enhancing interoperability and peacekeeping. Conducted under the auspices of U.S. Atlantic Command, this impressive exercise at the Joint Readiness Training Center put platoons from 22 partner and NATO nations through a rigorous 37-task training experience. The gain in interoperability and peacekeeping skills was significant, as was the tangible increase in good will and understanding of how the armed forces of democratic nations operate in the gray area of military operations other than war. In all, Cooperative Nugget was a visible reminder of NATO's contribution to peace and security from Western Europe to central Asia and beyond.

The JFQ Forum on NATO and European affairs in this issue is most timely. As we refine *Joint Vision 2010* and implement the Quadrennial Defense Review, we must examine where we have been and where we are headed in each of our geographic areas of responsibility. Thus these articles offer an excellent primer on the problems NATO will face in the future: the pace of Alliance enlargement, the management of NATO-Russian relations, the future of SFOR in the Balkans, the shape of Alliance command and control architecture, and the maturation of a European security and defense identity.

In all, we will have our work cut out for us in Europe; but our vital interests there, the importance of the transatlantic link, and NATO's contribution to peace and security throughout the world will more than justify our efforts.

JOHN M. SHALIKASHVILI
Chairman
of the Joint Chiefs of Staff

THE WINNERS OF THE 1996

Joint Force Quarterly

"Essay Contest on the Revolution in Military Affairs"

sponsored by the National Defense University Foundation, Inc.

FIRST PRIZE

"The Second Revolution"
by Captain James Stavridis, USN
Strategic Plans and Policy Directorate (J–5), Joint Staff

SECOND PRIZE

"The Profession of Arms in the Information Age"
by Lieutenant Colonel Arsenio T. Gumahad II, USAF
Office of Space and Technology, Headquarters, Department of the Air Force

THIRD PRIZE

"Black Lights: Chaos, Complexity, and the Promise of Information Warfare"
by Professor James J. Schneider
School of Advanced Military Studies, U.S. Army Command and General Staff College

JUNIOR OFFICER PRIZE

"A Revolution in Military Theory: Dynamic Inter-Dimensionality"
by Major Antulio J. Echevarria II, USA
Future Battle Directorate, U.S. Army Training and Doctrine Command

Prizes of $2,000, $1,000, and $500 were presented to the first, second, and third place winners, respectively, and a prize of $500 was awarded for the best entry by a junior officer (major/lieutenant commander or below). The winning essays plus two other contributions on the revolution in military affairs appear on the following pages of this issue.

The 1996 RMA Essay Contest

Introduced by WILLIAMSON MURRAY

The following articles represent the best of the 1996 *JFQ* "Essay Contest on the Revolution in Military Affairs" which was sponsored by the National Defense University Foundation. The six contributions—four prize winners plus two additional essays "short listed" by the judges as worthy of publication—suggest that enormous technological changes are underway and will continue for the foreseeable future. At the same time, it is difficult to understand exactly how such change will play out on the battlefield. That is true in part because we do not know either when or where our soldiers, sailors, marines, and airmen will be called upon to fight and kill, nor can we possibly know the conditions under which the next war will take place, nor even the simplest element of the equation: who will be the enemy. Will the next major war occur ten years from now or twenty years as was the case for our military after World War I, or even ninety-nine years like the British experienced after Napoleon's defeat in 1815?

What is clear is that there is a looming debate both within and among the services on what the revolution in military affairs (RMA) represents and what its implications are. This suggests that no one has a handle on what the face of battle will look like in the next century. Consequently, the worst path that the Armed Forces could take would be to believe that they know what is meant by RMA and embark on tailoring forces and acquiring weapons without experimentation and serious public debate on the future of national defense. Publication of a range of views such as those advanced by the authors of the articles found in this issue of *JFQ*, each singing from a different sheet of music, will stimulate that debate. We need more exchange of ideas, not less. There is no school solution on RMA, and those who think they possess *the* answers constitute a danger to realizing its actual as opposed to its imagined potential.

The very disparities raised by this debate suggest several other points. First, they underscore that we may not be reaching closure on what RMA epitomizes. There may in effect be a number of emerging RMAs. None of this is clear. My own prediction—from an historian's perspective—is that we will confront multiple RMAs over the coming decades, a state of affairs somewhat analogous to events during the last significant interwar period: the 1920s and 1930s. At that time various RMAs evolved from the conceptual to reality: combined arms, exploitation warfare, strategic bombing, carrier operations, and submarine warfare. These developments greatly changed the way war was waged in the first major conflict of this century. Thus to conclude that RMA comes from one source may deny other equally important possibilities. Moreover, as Andrew

Williamson Murray, professor of history emeritus at The Ohio State University, will contribute an article entitled "Thinking about Revolutions in Military Affairs" in the next issue of *JFQ*.

Marshall, director of net assessment within the Office of the Secretary of Defense—and the motivating force behind the *JFQ* RMA essay contest—has suggested, we might consider our current situation as being approximately what the military of the interwar years faced in 1923. In other words, there is a long way to go to work out the real possibilities and potential of coming RMAs.

we might consider our current situation as being approximately what the military faced in 1923

We should not forget that the future is capable of throwing us curve balls. We are at the beginning of an interwar period of indeterminate length. It may last another decade; it is just as likely to last fifty years. And if we have forty-five years of sustained peace, the Armed Forces will face the most difficult of military problems: keeping prepared for the harsh Clausewitzian world of friction, ambiguity, and fog in a time of peace. The longer the peace the more unrealistic our concepts may become. Above all, we may well forget the fundamental nature of war.

That Clausewitzian world, which has endured for three thousand years of recorded military history, will also hold sway in the next century. It is not that the entire weight of the past says so: everything we know about the nonlinear, incalculable world indicates that we will not ever achieve predictability given natural phenomena. As Barry Watts suggested in a recent essay, to believe we will achieve predictability, "one would need to overthrow nonlinear dynamics, the second law of thermodynamics, the fundamental tenets of neo-Darwinian evolutionary biology, and all the limiting metatheorems of mathematical logic. . . . No small task indeed!"

It is likely that in the next century our enemies—both large and small—will study us carefully. They will think long and hard about developing asymmetrical approaches to thwart our capabilities on the strategic, operational, and tactical levels. As we congratulate ourselves on the extraordinary possibilities of technology, we must not forget the lessons of Vietnam, when enormous advantages counted for very little in the final analysis. Above all it was hubris that led to that catastrophe; and since we will always be up against human beings, we cannot assume that they will act as we expect. "Big Blue" may have beaten a chess master, but that computer would have gone down to defeat if Kasporov had announced that he was going to play checkers instead.

Finally, remember that we live in a democracy based on individual liberties and the pursuit of happiness. Accordingly, it is extremely doubtful whether the American people will continue to fund the Armed Forces at present levels. Some believe that military spending has bottomed out. But considering the pressure exerted by an aging population and the indeterminate nature of threats on the international scene, we may well see defense budgets fall to the level of the late 1920s. With less money we must think strategically; and we are not doing enough of that today. JFQ

U.S. Air Force (Jeffrey Allen)

The Second REVOLUTION

By JAMES STAVRIDIS

FIRST PRIZE 96 REVOLUTION IN MILITARY AFFAIRS

A paradox is emerging as the revolution in military affairs (RMA) moves ahead: the larger the magnitude of the revolution, the greater the possible long-term advantage to a potential enemy. Why? The answer lies in the second revolution.

The system of systems—a complete architecture of detection, selection, display, targeting, and attack—will revolutionize war. Related advances in information warfare will complement and enhance the progress made in the first revolution. We will adjust and integrate these developments with new organizations, doctrine, and tactics, techniques, and procedures, many of which will be integrated into the Armed Forces by early in the next century, and other industrialized nations will gradually follow suit. Indeed, some components are already entering service, and others are being aggressively purchased, programmed, and

Captain James Stavridis, USN, is a member of the Strategy and Plans Directorate (J-5), Joint Staff, and previously commanded *USS Barry*.

researched. Both doctrine and operational concepts are undergoing study and change. *Joint Vision 2010* makes it clear that we are on the leading edge of this first revolution, evolving the military

throughout military history for every action there has been a reaction, often stronger

for a "challenging and uncertain future." We are moving into the first revolution.

But throughout military history—in fact, all of human history—for every action there has been a reaction, often stronger and usually more important. In military science this is translated into *offensive* and *defensive* weapons, tactics, and systems of war. At other times it is manifested in a revolution brought about by a sudden technological advance. Stone was superseded by iron and bronze as the materials of offensive weaponry; and fortifications were improved in response. Then came the rise of organized armies and the warrior on horseback as a weapons system until the cannon and gunpowder changed everything. Firepower improved, with revolutionary jumps such as the rifle, machine gun, and tank. The great defensive barriers of the early 20th century were countered by *Blitzkrieg*, the massive armored battleship was overtaken by carrier airpower, and one day the lethal ballistic missile may be rendered ineffective by a new defensive system.

While this analogy is not precise, it is possible to think of the journey of RMA from now to the early part of the next century as consisting of two distinct revolutions. The tide of the first is rising today and will crest shortly after the turn of the century. It is characterized by the system of systems, information warfare, dominant knowledge, precision weapons, sophisticated processing, display capabilities, low observables, smaller dispersed forces, and massed weapons effects.

The second revolution will likely be different. By watching the first revolution, an enemy may be in a position to "skim the cream" of its advancements while simultaneously moving into the second revolution. It may thus obtain much of the technology at substantially lower cost after the expensive researching, prototyping, and fielding are complete. That is the essence of the paradox: if the current revolution really is a radical process requiring major investment and an expensive and extensive force restructuring, we may be left with fewer resources to pursue a second revolution. The result may be a very expensive, highly capable, but distinctly first revolution force structure.

An enemy may have more efficiently moved on to a second revolution, taking advantage of our efforts to develop and field the first set of systems—because much of the technology involved in the first revolution is commercially applicable, dual use in character, and widely available—from the Internet to the classroom. We must never completely base our strategy on something that we cannot control; and the lesson to be drawn from interaction with technology is that the experience is far from controllable. We must recognize that actions today will drive participation in, and actually permit the execution of, the first revolution. But even as we pursue the first series of advances, we must consider and plan for the inevitable reaction—the second revolution.

The First Revolution

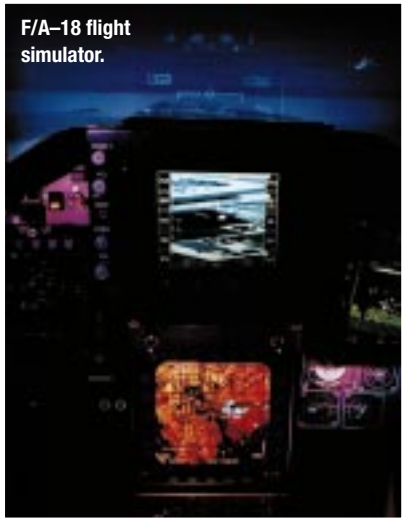
It is generally accepted that the first RMA proffers three key instruments of national power. The first is the *system of systems,* shorthand for the vast collective synergy achieved by melding formerly disparate means to establish battlespace awareness, command and control, and precision force.[1] Second and equally important is *extended information dominance*, the means to control bitstreams in the increasingly interdependent global information network. The third instrument—a corollary of the first—is known as *information warfare*, which can be defined as the capability to disrupt or override enemy information systems while defending one's own.[2]

The system of systems has received most of the attention in the RMA debate. It is marked by technologies, tactics, and organizations that allow for accurate wide-area scouting (unmanned aerial and undersea vehicles, overhead sensors, Aegis radars, JSTARS aircraft, acoustic sensors); essentially instantaneous data fusion (global command and control system, C^4I for the warrior, linked combat centers); and precision massed fires (precision guided munitions, long-range strike, enhanced effect weapons). Combining these systems, the first revolution will provide dominant battlespace knowledge and the ability to take full advantage of it—dissipating if not eliminating the fog of war.[3]

Applying extended information dominance through "bitstreams" is a second characteristic that many associate with the first RMA. Providing information—instead of military capital stocks and troops—could enable us to better execute alliance obligations, undertake stand-off operations, and realize greater combat efficiencies. For instance, we could furnish both target information and surveillance through bitstreams to allies, who could then leverage their systems far more effectively in a region, such as by launching precision

Simulated aerial chemical attack, Roving Sands '97.

1st Combat Camera Squadron (James D. Mossman)



F/A–18 flight simulator.

U.S. Navy

strikes or conducting peace operations based on distant surveillance systems.

Information warfare, also referred to as hacker warfare or cyber warfare (or commercially as information assurance), is the third emerging instrument. As national systems—from banking to electric power and communication—become increasingly dependent on computer networks, a huge vulnerability arises. "Digi-criminals are already having a great time . . . the outlook for protection is bleak."[4] By using advanced software to attack enemy information systems, great advantages can accrue to the state or transnational actor best positioned for cyber warfare. Access may directly come from satellite broadcast via integrated computer networks, or the Internet itself. This could become the guerrilla warfare of the future.

Combined, these technologies comprise the first RMA: "a new paradigm of warfare, based not on attrition, but on the ability to paralyze and shock."[5] These approaches and technologies will indeed revolutionize warfare by early in the next century.

Adversarial Reaction

While initially costly to research, develop, and field, many of the technologies of the first revolution will quickly become accessible. This is due to the extensive applicability of commercial technology inherent in the revolution. A potential enemy could recognize this fact and be able—with relative ease—to incorporate these rapidly disseminating elements of the first RMA into its force structure. "The low cost of many information age technologies will help potential adversaries improve their military capabilities as they learn to leverage these technologies effectively."[6]

Both extended information dominance and information warfare will stem from computers. The knowledge that drives their implementation will be widely available on the Internet, through commercial publications, and by study at American and other Western institutions. Of particular significance will be access to display systems to fuse and organize information for easy access in smaller units—essentially the function of commercial information systems. Accelerating diffusion of

these technologies will be a prime element in the strategic construct early in the 21st century.

Likewise the system of systems, although large and complex, is intelligible and applicable to an enemy through its component parts: "The larger the system, the smaller and more powerful the important individual parts."[7] But an enemy would be left with the problem of countering these portions of the first RMA that are too expensive for them to acquire. This could lead to an endless cycle in warfare: an enemy discovers ways to fuse what it can afford from the *first* revolution with new ideas, technologies, and concepts—thus creating a *second* revolution in military affairs.

the system of systems is intelligible and applicable to an enemy through its component parts

The Second Revolution

Although it is difficult to identify all the systems that will survive and become central to the first RMA, it is evident that precision weapons, advanced sensors, low observables, sophisticated networks, and information systems will predominate. The challenge is to determine what might be central to a second revolution. One approach to this problem is to examine the broad categories of technology and military-science application in the first revolution and then seek counters to them. It is also important to identify areas of study that may be under-represented in the first revolution. Looking at counters to the first RMA is particularly instructive and will probably provide the best point of departure (see the accompanying figure which lists points and counterpoints).

First, an enemy would seek to place many key command and control nodes underground. They would be joined through hardened or buried connectivity links. Other nodes would probably be located at sites that are politically difficult to attack such as hospitals, schools, and marketplaces. Their nodes would also be small and highly dispersed across large areas, perhaps in kiosks located in urban centers and towns around the country. Mobility and inexpensive forms of stealth would be incorporated in their design and placement.

Second, many enemies would explore biological advances that have warfare applicability. Chemical and biological weapons are the most obvious threats; but beyond such essentially simple weapons general advances in this field over the mid to long term may dwarf the importance of first revolution systems. Human performance enhancers—particularly those that provide the ability to process enormous levels of data and rapidly make coherent decisions—may be the most significant advances. Stimulants, narcotics, anabolic agents, glycoprotein hormones, and beta blockers have battle potential. Moreover, the medical literature states that "three areas of genetics hold particular promise: gene identification, disease susceptibility, and gene therapy."[8] The fusion of enhanced human abilities with new technologies may be a central element of a second revolution.

Third, a second revolution enemy could skim the cream from the advancements of the first. Then it would have highly precise self-navigation units, reasonable levels of computational power, and somewhat sophisticated capabilities to undertake regional information dominance. This enemy would likely have some ability to deliver precise weapons, although it would probably not have extensive military capital stocks of these assets. It would have developed operational concepts that optimize the use of a few expensive and highly precise systems by mixing them with area strikes by far less expensive weapons. In addition, this enemy might have antisatellite systems, dazzlers to use against our optics, and effective jamming and counterjamming devices.

A fourth category that must not be overlooked is the capability of an enemy to use simple, cheap intelligence systems—and lots of them—to counter first revolution systems. For example, hundreds of fishing boats with only a few carrying intelligence and navigation suites could operate in the littorals acting as markers. Civilian

The Second Revolution

COUNTERS

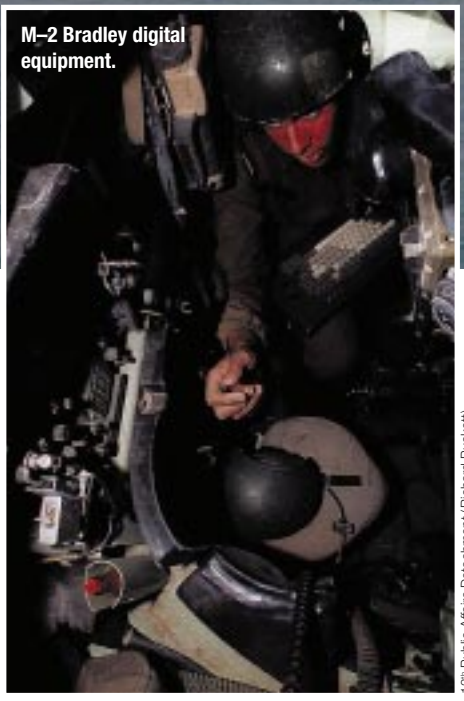
First Revolution	Second Revolution
precision strike	hardening
	burying
	dispersing
	multiplying
information warfare	primitizing
	isolating
	counterattacking
dominant maneuver	responsive maneuver
advanced sensors	blinding
	dispersing
	multiplying
quality	quantity
	mass
centralized display	diffused display

NEW ELEMENTS OF THE SECOND REVOLUTION

biologics, advanced materials, and nonlinear scientific advances

Predator UAV over *USS Carl Vinson.*

U.S. Navy (Jeffrey S. Viano)



M–2 Bradley digital equipment.

13th Public Affairs Detachment (Richard Puckett)

aircraft, both rotary and fixed wing, could operate in and among high-tech aircraft. In certain situations such primitive systems can be extremely effective, particularly in conflicts fought at a threshold below full regional war.

A fifth concern is the massive use of cheap, crude, but potentially effective cruise missiles and mines (at sea and on land). Even an Aegis system or Patriot battery can be quickly depleted of anti-cruise missiles. Mines are a challenge. Flooding landing zones or littoral seas with them can be an effective denial strategy. Bases for forward forces can be closed by placing large numbers of crude but relatively inexpensive explosives at key points. Destroying or denying something goes a long way toward controlling it.

Weapons of mass destruction, from low-yield tactical nuclear devices to the next generation of chemical and biological weapons, are a possible sixth area of concern. We must not assume that an enemy will be constrained from using such weapons because of our superior nuclear arsenal. It may think we would not respond with nuclear strategic strikes against limited first use of chemical, biological, or tactical nuclear warheads—and it would probably be right. For example, an enemy could indicate that it would employ tactical nuclear, biological, or chemical weapons only at sea, perhaps constraining our ability to respond with strikes on their population centers and effectively limiting our use of similar weapons to the same area.

Seventh, second RMA advancements in armor and materials may eventually counter first revolution systems and pose a significant challenge. Advances in ceramics, steel alloys, polymer composites, and thermoplastic resins hold extraordinary promise. Such scientific innovations will be shared over the Internet and openly taught at American universities. Pre-lubricated surfaces, nylon composites superimposed on steel, diamond coated bearings, and other materials may play in the second wave of RMA technology. All the precision and display capability in the world will not be of use if targets are hardened beyond the ability of such systems to destroy them.

There will also be new operational concepts associated with the second RMA, constituting an eighth area of interest. Clearly, if the central organizing tenet of the first revolution is maneuver warfare, tactics will be developed to counter that approach. What could be called "responsive maneuver" may evolve, which could combine static defenses and rapid counterattacks that seek to

flank, isolate, encircle, and kill maneuvering units. Entrapment and wide-area ambush tactics may develop beyond current levels of expectation. Although today we are enamored with precision and maneuver, the endless competition in warfare of precision versus mass—often manifested in new tactics—tells us that more change lies ahead. The second revolution like the first will generate new doctrine and new tactics, techniques, and procedures.

the second revolution like the first will generate new doctrine, tactics, techniques, and procedures

Finally, we must not overlook longer term research that goes beyond a second revolution for a truly nonlinear discovery that utterly and instantly changes the calculus of warfare. Given the acceleration of technological advance, it may be possible to leap ahead to ideas that are only dimly glimpsed today—concepts that bend the laws of physics beyond the horizon of common thought. Hyperpropulsion, optics, biologics, control of the electromagnetic spectrum—the possibilities are endless. This may be an area for hedging through research and highly limited prototyping.

In a general sense, the essence of a second RMA is the application of asymmetrical warfare against the United States, which is the leader in first revolution technologies and systems. This is a reverse of the competitive strategic approach that was pursued in the mid-1980s during the climax of the Cold War. While such actions are unlikely to endanger our existence, they can threaten our critical national interests in an increasingly interdependent world. The second revolution may thus provide an enemy with a great deal of asymmetric leverage—that is, influence out of proportion to political, economic, and military strength.

In sum, we must continue our progress through the first revolution. This course of action provides the best hedge against a range of challenges that may confront us in the next century. At the same time we must consider the courses enemies may pursue to achieve a second revolution as they search for asymmetric leverage. Accordingly, we should:

- Set up analysis cells to explore possible decisions by enemies with regard to first and second RMA systems. This should be done independently by the services, Joint Staff, Defense Intelligence Agency, Central Intelligence Agency, etc. The results then need to be compared, fused, and incorporated in upcoming strategic and procurement activities, including those stemming from the quadrennial defense review.
- Evaluate potential second revolution systems for research, development, and fielding. These technologies might include biologics and advanced materials. Nonlinear accelerations in technology and science should be considered.
- Develop operational concepts to overcome potential enemy responses, such as the cycle of maneuver countered by responsive maneuver, responding to primitive systems and tactics, and exploring anti-mass/quantity strikes against fewer though more precise and omniscient systems.
- Recognize that the first revolution will include some costly mistakes, miscues, and maldeployments. Patience will be required in fielding first wave systems, then adapting them to the second revolution.
- Develop a hedging strategy to react as the second revolution accelerates.

During the early debate over the revolution in military affairs, Admiral William A. Owens, the former Vice Chairman, indicated that "the problem with deep, fast, and rampant innovation is not getting people to accept the new but to surrender the old."[9] Ironically, that same sentiment can be applied to our preoccupation with the first revolution as a second looms on the horizon. JFQ

NOTES

[1] William A. Owens, "The Emerging System of Systems," *Military Review,* vol. 75, no. 3 (May–June 1995), pp. 15–19.

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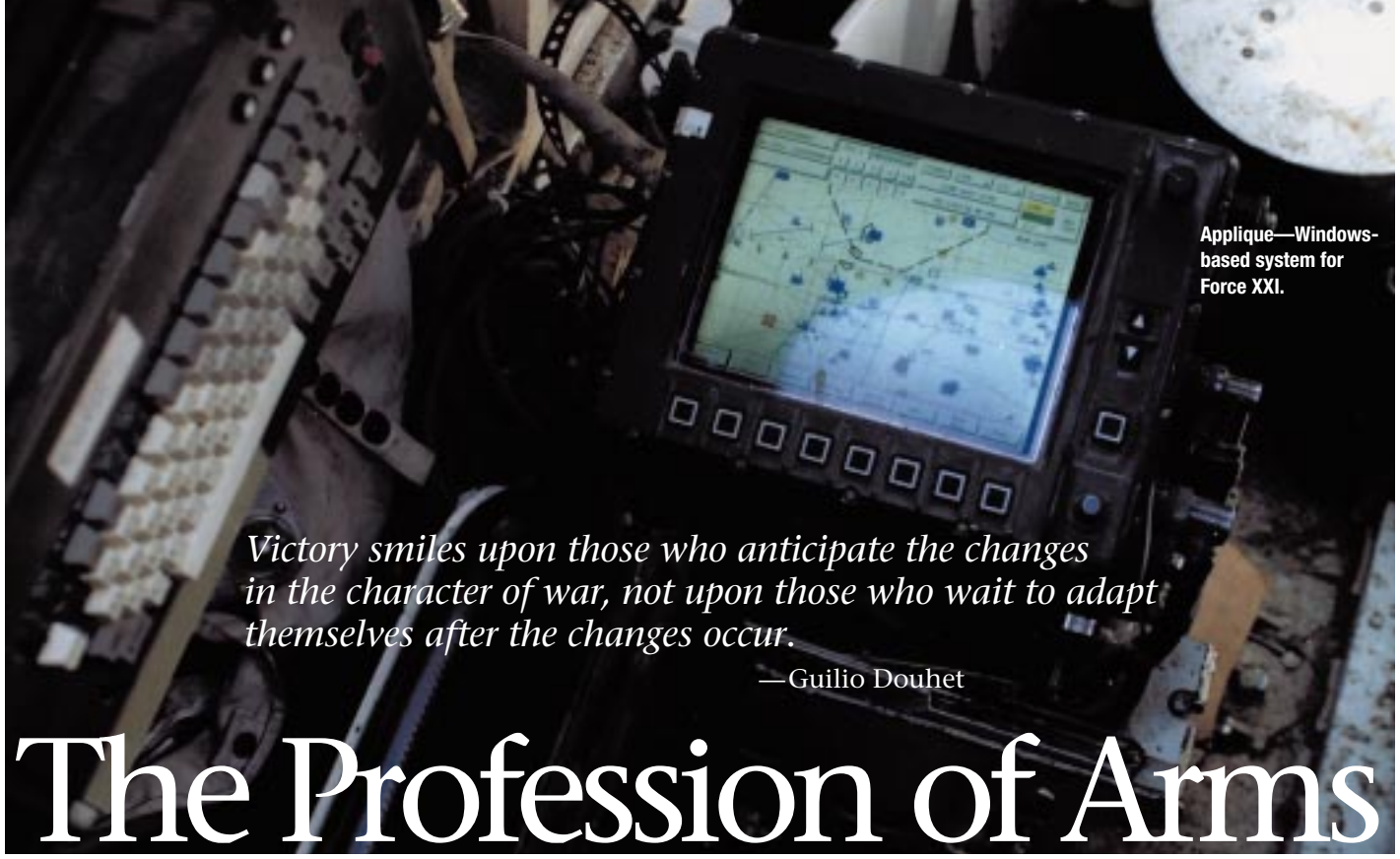
This article is an edited and abridged version of an entry that received first prize in the 1996 *JFQ* "Essay Contest on the Revolution in Military Affairs" sponsored by the National Defense University Foundation.



Applique—Windows-based system for Force XXI.

28th Public Affairs Detachment (Jacqueline Griggs)

Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.

—Guilio Douhet

The Profession of Arms in the Information Age

By ARSENIO T. GUMAHAD II

SECOND PRIZE 96 REVOLUTION IN MILITARY AFFAIRS

Many believe information is a potent instrument in war. The military subscribes to this idea and calls it *information warfare*, defined as any actions that deny, exploit, corrupt, or destroy enemy information and its functions; protect us from such actions; and exploit friendly military information functions. To some, information warfare simply means using information to achieve national objectives—a form of war about who knows what, when, where, and why and just how well we know both ourselves and our enemy. Its target seems to be the human mind. Information dominance has thus become a prerequisite for fighting future wars.

The use of information in war has been a basic warfighting requirement throughout history. Technology has made information more available, and now it may become the weapon of choice. Furthermore, a revolution in military affairs (RMA) involving information may be on the horizon. Some view information warfare only in a supporting role—enhancing traditional combat missions. Others regard it as a powerful capability on the strategic level, at a point on the conflict spectrum before general escalation and deployment of combat forces for action.

In addition, some hold that information warfare can be conducted prior to conflict breaking out. Modern strategy often perceives an enemy state as a system of concentric rings representing fielded armies, the population, infrastructure, organic essentials, and leadership with information binding them together. Disrupting the information flow by attacking internal infrastructure hinders the ability of an enemy to conduct offensive operations. However, some caution that

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advocates of information warfare ignore its unanticipated and perhaps counterproductive effects.

Information is increasingly becoming important to the power and wealth of modern society. Nations once fought for control of territory and resources; but the new battleground also involves the information domain. As one characterization of this phenomenon has it:

Evolving technologies may result in a transition from information in warfare—information as a supporting function of the traditional attrition/maneuver operations—to information as warfare—in which attrition and maneuver become supporting elements of military, political, and economic leverage through information control.[1]

Advanced societies depend on an infrastructure that includes subways, airports, telephone networks, and electric power grids. Terrorists, knowledgeable of these vulnerabilities, need only target them to wreak havoc. The Internet is now a popular and convenient vehicle for terrorists and rogue nations to exchange techniques for producing crude but effective weapons.

Two forms of sabotage or terrorism are possible. The first is the traditional disruption of order using violence. The second and more sophisticated is either electronic or information-based. The United States relies upon technology and information systems to conduct its affairs. Targeting them creates widespread confusion and terror. In government and industry the threat of intrusion is all too real. According to the National Computer Security Association, 69 percent of those firms surveyed in 1993 were infected with a malicious virus, a problem which costs American business an estimated $3 billion annually.

The government is not immune to such tampering. An attack on the Internet by a graduate student in 1990 disrupted computer installations nationwide. In the same year Australian hackers were charged with damaging data on U.S. government computers. The pool of potentially hostile information warriors is huge and includes former Soviet and Warsaw Pact intelligence operatives, mercenaries, unemployed technical experts, et al. Eastern Europe, particularly Bulgaria, is said to be the leading exporter of viruses today.

the pool of potentially hostile information warriors is huge

Law and Morality

The Air Force Chief of Staff, General Ronald Fogleman, suggests that "because exploiting [information systems] will readily cross international borders, we must be cognizant of what the laws allow and will not allow." Information warfare raises questions that are difficult to address. When does war begin in an electronic environment? How does one measure damage and define victory? Does a malicious probe of a computer system warrant response in kind or a more violent response? Who decides to deploy offensive information weapons? Would a systems attack by the United States require congressional approval?

The vulnerabilities of traditional nonmilitary targets are heightened in information warfare. Since enemy civilian infrastructure is a potential target,

. . . infowar may only refine the way modern warfare has shifted toward civilian targets. Taking down a country's air traffic control or phone systems might be done cleanly with computers—but it still represents an attack on civilians.[2]

As in the case of nuclear weapons, Clausewitz's notion of absolute war appears real in conducting information warfare. While the attack is clean the resulting suffering may be morally unjustifiable. Consideration of moral and legal issues raised by information warfare has not advanced as quickly as technology and doctrine. They span the legal spectrum and include issues of intelligence, space, use of force, and neutrality.

What is Information?

Information begins as derived data from observable facts or events. Interpreting data leads to the development of information. The ultimate interpreter is the person receiving the data. At times, though, an observed event is too complex for the human mind to dissect. Machines are thus used to reduce data into a manageable and comprehensible set. They are information systems and come in both hardware and software forms. The draft of Joint Pub 3-13, *Information Warfare*, refers to information as any communication or representation of knowledge such as facts, data, or opinions in any medium or form. Joint Pub 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines it as the meaning that a human assigns to data by means of the known convention used in their representation. Others conceive of it as a physical property—like mass and energy, inherent in all matter. Under this concept military systems are seen as being based on, if not composed of, information. The role of information warfare therefore becomes apparent: "If information is a veritably physical property, then in the information age winning wars may depend on being able to hurl the most information at the enemy, while safeguarding against retaliation" (John Arquilla and David Ronfeldt, "Information, Power, and Grand Strategy: In Athena's Camp," in *The Information Revolution and National Security: Dimensions and Directions*.)

1st Combat Camera Squadron (James D. Mossman)

Air operations center, Roving Sands '97.

Although our military justice system provides a limited foundation on which to base new laws and regulations in this area, the only recourse is to extend the provisions of current laws to cover information warfare. Without a definitive legal basis, however, the limits of this new form of warfare remain vague and controversial.

Cyber Warriors

Equipment for the cyber warrior is not science fiction. Development is underway—partly as advanced demonstrations found in the Army science and technology master plan—and includes multisensor-aided technology, digital battlefield communications, intelligent minefields, precision munitions, night imaging, and integrated multimedia information transport. It is only a matter of time before these systems move from the laboratory to the battlefield. The cyber warrior is almost completely autonomous with tools configured to provide maximum information about the combat environment. As an integrated capability, the gear allows for collecting, processing, analysis, and interpreting information critical to a mission. When Sun Tzu stated that "If you know your enemy and know yourself, you need not fear the result of a hundred battles" he was referring to what is known today as *situational awareness*.

Hierarchical organizations were a hallmark of the industrial age. The need to respond to the innovations of the industrial revolution produced a hierarchical society. This strong structure was necessary to attain strict organizational harmony and discipline. The military more than any other institution needed strong command structure to prosecute its unique mission of organized violence. It is evident that order and discipline characterize the professional military, especially in combat.

Futurists predict a notable shift in societal behavior in the information age. Some envision conditions in which the individual is the centerpiece—personal autonomy as the common element of future social interaction—a world which becomes "multi-centered and multi-functional."[3] Here "we will socialize in digital neighborhoods in which physical space will be irrelevant and time will play a different role."[4] In an address before the Association of the United States Army in 1994 General Frederick Franks stated that "as information proliferates at faster speeds and is available to a wider array of individuals, hierarchical organizations evolve into networks and power is shifted more to individuals and groups."

The challenge to military leaders will be integrating disparate interests and varied emotional levels of individuals. The traditional collective and corporate nature of armed forces is affected by a trend toward individualism. For armies to succeed in war they must have a cohesive, integrated, and common objective. The military is built around a "team concept" wherein the well-being of the unit supersedes that of the individual. Members functioning strictly as individuals undermine unit integrity and threaten mission success.

With the stroke of a key and access to an e-mail address, one can easily bypass the normal chain. Democratic principles of free speech could damage the effectiveness of established channels if taken to the extreme. (The President has an Internet address so that anyone, anywhere, anytime can send a message to him, unfiltered and unedited.) But is the chain of command necessary in the information age? Hierarchical organization must endure for the military to succeed in battle. But it is questionable whether the structure of the military will survive if central bureaucracies disappear, and some foresee a day when traditional command and control arrangements will become obsolete. But unity of command— one precept which has remained unaltered in every successful war—must not be compromised. Thus greater discipline is required to preserve command unity and control.

conflicts in the information age will not be less common or less violent

Training and Doctrine

Information technology shapes training. State-of-the-art technology promises to make it more cost-effective without sacrificing performance and perhaps even improving it. Simulators are more realistic and offset the high operational price of real-world training.

U.S. tank commanders of the 21st century will train in a virtual world more than in the real one. The result will be soldiers who are better prepared—by computer simulators integrated into their vehicles that will enable them to practice just hours before combat.[5]

The Army is experimenting with battle laboratories using advanced technology and systems to simulate the complex interaction of diverse elements on the future battlefield. An Army exercise conducted in autumn 1994, Atlantic Resolve, employed live, virtual, and constructive simulations for training and experimentation. The method was positive and since then the battle laboratory has paid dividends by conditioning decisions in resource allocation and weapons acquisition.

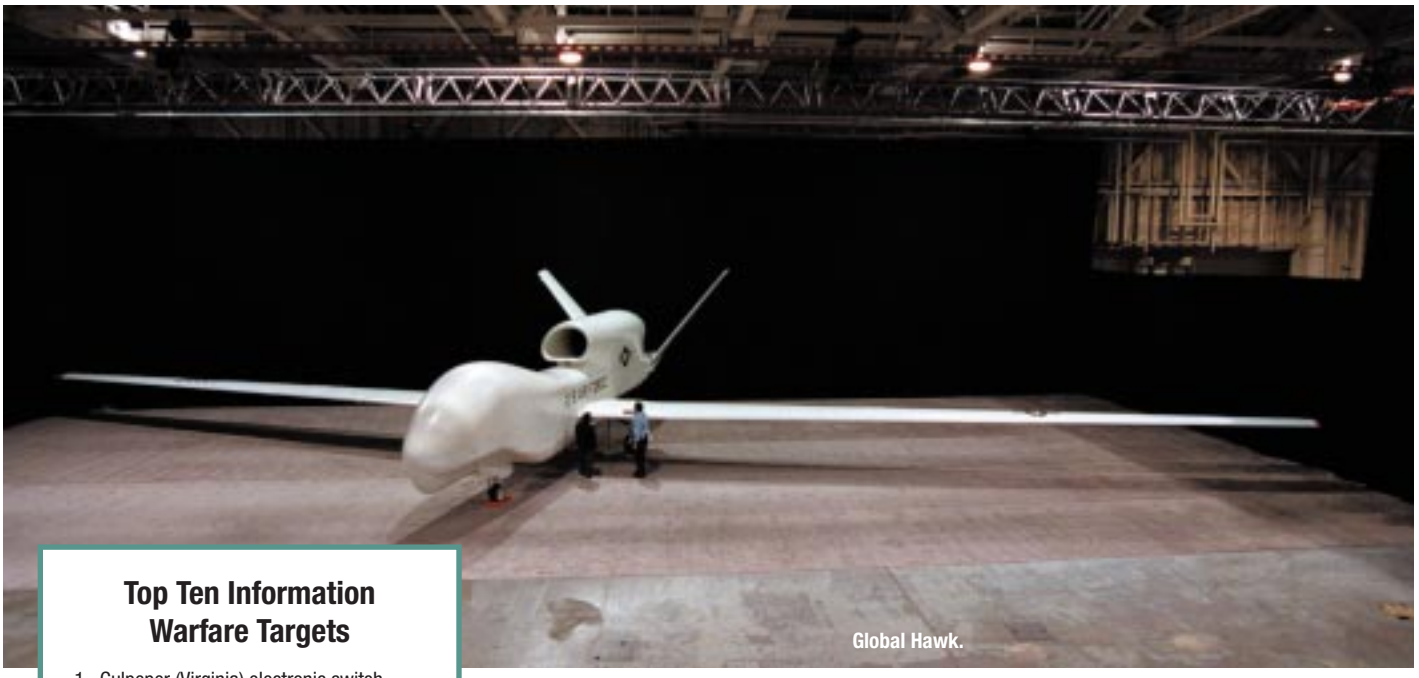
The high-tech military of the future will be smaller but more sophisticated and specialized. In two to three decades the organizational structure will favor direct lines of command with mid-level grades eliminated. The military will be comprised of well trained, skilled warrior-technicians who are comfortable operating with advanced electronic gadgetry.

Conflicts in the information age will not be less common or less violent. On the contrary, the transition period between the industrial and information ages is likely to be even more chaotic.[6] If committed to war, cyber warriors will fight as ferociously as their predecessors. Information will enhance the way they operate on the battlefield. These future warriors will quickly outflank and outmaneuver an enemy with knowledge of its position and combat situation. With information age weapons at their disposal they will engage an enemy precisely and decisively.

For information to be a catalyst for a new RMA, doctrinal and organizational changes must occur. Technology enables the application of revolutionary innovations to warfare. But to sustain their power and confirm their worth as strategic and operational weapons requires modification of organizational structures supported by doctrine articulating the efficient and proper employment of technological innovations on each level of war. Past conflicts yield insights into how technology helps ensure victory. One aspect seems constant—formulating doctrine to exploit the full potential of technological innovation was a tedious process. Yet devising doctrine early is important to the expert use of information capabilities. An organizational structure grounded in doctrine guarantees the orderly development and effective employment of information age weapons.

On the strategic level the United States seeks to acquire, exploit, and protect information to support national objectives. Sectors for exploitation and protection include the economic, political, and military. Cultural as well as social information may also be required to support U.S. interests and strategic goals. On the operational level information warfare consists of attacking or defending information as well as exploiting it. Since information is critical to friend and foe alike, the object is the denial, deception, destruction, and attack of enemy information-critical systems.

Military doctrine codifies the belief about the best way to conduct military affairs. Doctrine is drawn most of all from experience. But past events may not be relevant in the information age. Current efforts to develop Air Force doctrine tend to treat information warfare as merely a new tool to enhance missions. It is not generally viewed as a weapon on its own merits. Since experience in information warfare is limited, doctrine for its use is



Global Hawk.

Teledyne Ryan Aeronautical (David Gossett)

Top Ten Information Warfare Targets

1. Culpeper (Virginia) electronic switch which handles all Federal funds and transactions
2. Alaska pipeline which carries 10 percent of all U.S. domestic oil
3. Electronic switching system which manages all telephony
4. Internet
5. Time distribution system
6. Panama Canal
7. Worldwide military command and control system (WMCSS)
8. Air Force satellite control network
9. Strait of Malacca, the major maritime link between Europe-Arabian Peninsula and the Western Pacific and East Asia
10. National Photographic Interpretation Center (Washington)

—Published in *Wired* magazine (July/August 1993)

not easily derived. Developing information warfare doctrine results from an analysis of all the likely uses of information on all levels of war. In other words, an examination of how it is used as a national strategy mechanism is critical in addition to how it is employed on the lower levels of operational art and tactics. In all cases, both the offensive and defensive nature of information warfare requires detailed examination.

Clausewitz said that war "is a continuation of political intercourse, carried on with other means." Wars commence when conflicting nations can no longer conduct political dialogue. It is the last resort if diplomats fail to produce an agreement. But are ideas promoted by Clausewitz still valid in the information age? He stressed the relationship between industrial age states in politics and war. An enemy in the 21st century may be as ambiguous as Clausewitz's depiction of the fog of war. When nation-states give way to transnational interest groups, who will the military fight? Over the next twenty to thirty years the Armed Forces will confront diverse threats from advanced states to non-state actors such as terrorists. Knowing one's enemy is a timeless imperative in war. Therefore future doctrine must stress flexibility in strategy above all else. In Vietnam, strategic bombardment did little to change the course of the events. The lesson here is important: the love of technology must not deter the search for more effective and proper strategic alternatives.

Doctrine and strategy must account for the diverse mix of adversaries the Nation could face in the future. The threats range from a sophisticated enemy employing information technologies to the same extent as the United States to a rival totally devoid of high-tech capabilities.

A Sophisticated Enemy

The Persian Gulf War revealed the effectiveness and power of information age technologies and weaponry. Some regional powers are looking for ways to counter precision guided weapons, computers, and space-based assets. An information warfare attack on any information-advanced state may devastate its national infrastructure. Targeting financial, communications, electrical, and transportation nerve centers seriously impedes an enemy's ability to conduct war. Theoretically, victory is achieved without firing a single shot—at least a psychological victory demonstrating the will and resources of the attacker. Among advocates of information war this is the most discussed scenario. Sun Tzu instructs us, "to fight

and conquer in all your battles is not supreme excellence; supreme excellence consists in breaking the enemy's resistance without fighting."

On the operational level information warfare seeks to distort and control the "adversary's perception of the battlespace by controlling or corrupting the information he uses, while providing the friendly commander with an unambiguous picture of his battlespace."[7] Techniques are used to defeat enemy information capabilities within battlespace constraints, including attacks on command and control network—the ability to maintain situational awareness and decisionmaking in the face of uncertainty—and the intelligence apparatus—the capacity to predict and anticipate the intentions and actions of friendly forces. Destroying these key elements at first opportunity is mandatory.

Space-based systems provide significant command, control, and intelligence capabilities to an enemy, perhaps equal to those of the United States. Thus a top priority of information warfare is enemy space systems. Taking out such assets quickly and precisely is paramount. Technology and weapons development in the near term must focus on neutralizing enemy eyes and ears in both air and space. Potential hardware and software weapons include anti-satellite munitions, precision bombs to strike ground stations, and software attacks against computers and networks. Tactically, this kind of warfare consists of electronic measures and physical destruction of information nodes.

information attackers may be far away from their objectives

Force Enhancement

Advanced systems can enhance our warfighting capability with superior command, control, communications, and intelligence networks. Their contribution during Desert Storm stimulated our appetite for high-tech systems. Current systems are routinely used in operations such as jamming radars, monitoring communications, and tracking movements. Future technology could enable us to impose electronic embargoes and detect vehicles or identify individuals on the battlefield.

Real-time or near real-time information on enemy locations, dispositions, capabilities, and indicators of intentions from surveillance and reconnaissance assets gives commanders situational awareness. Wide bandwidth digital communication systems afford real-time command and control links among commanders and units and between the National Command Authorities and globally-dispersed forces. Precision navigation systems, like the 24-satellite constellation that comprises the global positioning system, enhance weapons and delivery systems. Accurate weather data enables direction of forces at the right time in support of tactical, operational, and strategic operations.

Information as Weapon

A successful information warfare offensive targeted at America would be a major disaster. Today an element of information dominance ensures that U.S. and allied systems are safe from any attack. The government, military, and industry must remain alert to attempts aimed at interrupting our activities. Enemy software penetration of the U.S. intelligence network or the communications infrastructure of a military commander could be fatal in war. Nations with emerging capabilities are known to target our systems. Terrorist groups and multinational organizations—to include the private business sector—also have keen interests in information sabotage.

The Internet attack in 1990 was perpetrated by an amateur. Professional computer hackers sponsored by hostile states or groups can do much more damage. And, as mentioned earlier, there are many computer specialists willing to offer their expertise to the highest bidder. Since the arena for hackers is the global network of computers and communications, information attackers may be as far away from their objectives as possible, unlike terrorists planting bombs. The covert nature of this endeavor is especially threatening.

Another trend hindering U.S. information dominance in war is the proliferation of military-relevant technologies outside the United States. According to one recent analysis,

. . . precise navigation and imagery in the wrong hands can imperil U.S. forces. Space-based communications reduce the U.S. advantage in military command and control. Cryptologic capabilities could permit terrorists to plan havoc undetected.[8]

Economically strong nations or groups freely purchase advanced technologies on the open market. Controlling the flow of such technology outside the United States or to radical actors is difficult. Most advanced systems have legitimate civilian applications. The military is increasingly turning to commercial products because of declining budgets. Dual use or sharing of commercial systems to support military operations, particularly communications satellites, may be the wave of the future. The fear lies in their vulnerability to attack and exploitation. Military systems are usually designed for security and survivability whereas civilian systems are not because of the costs involved.

28th Public Affairs Detachment (William Cronk)

Testing Dismounted Soldier System.

Cyber Warrior

integrated headgear—collects information for analysis and funnels latest intelligence to soldier in the field

lightweight helmet—provides greater protection with mounted display for night-vision sensors, miniature flat video panel, and voice activation for computer

body armor—allows room for computer while protecting soldier against nuclear and chemical hazards

thermal sight—sends multiple still-frames back to the high command, providing battlefield intelligence and damage assessment

computer—runs technology and gives soldier friend-or-foe identification, detects mines and chemicals, and tells exact location (embedded in lumbar region of body armor)

wireless connection—links weapon to monitor in helmet allowing soldier to take aim without exposing body

"All warfare is based on deception," Sun Tzu once declared. "Hence when able to attack, we must seem unable; when using our forces, we must seem inactive; when we are near, we must make the enemy believe we are far away; when far away, we must make him believe we are near." Deception is a feature of warfare—in the 21st century deception will be information manipulation. Targeting information infrastructure to create misinformation, confusion, and panic is an objective. The results can be disruption of society, economic collapse, elimination of decisionmaking ability, and reduced military effectiveness. Information warfare is useful in battle and a promising weapon of choice. Clausewitz's dictum that war is simply an extension of politics by other means is also applicable to covert actions.

Far removed from physical harm, information warriors using the global network can attack information systems worldwide. Their strategic goals might include theft (stealing strategic plans), modification (inserting errors in databases), destruction (wiping out economic intelligence data), and annihilation of infrastructure (introducing a software virus). With such tools the information warrior could change the course of an action by a potential enemy to favor U.S. policy.

The Gulf War demonstrated the decisiveness of information technologies. A new RMA is emerging with these capabilities at the center. An effective information warfare campaign depends on developing the doctrine and organizations to fully exploit its potential. At national level, covert information warfare against an enemy can help achieve policy objectives before committing forces. On the operational and tactical levels, it incapacitates enemy information-based systems, leaving its military confused while giving U.S. forces an overwhelming advantage in the field.

However potent such warfare is against a technologically advanced enemy, it must be used in a judicious and calculated way. Information warfare is not a panacea for all conflicts and cannot replace arms in combat. As in the past, knowing one's enemy and how best to defeat it are crucial. History reveals the futility of employing advanced technology against an ill-defined enemy center of gravity. Recourse to information warfare must be objective and highly selective. JFQ

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[4] Nicholas Negroponte, *Being Digital* (New York: Vintage Books, 1995), p. 7.

[5] Judith Gunther, Suzanne Kantra, and Robert Langreth, "Digital Warrior," *Popular Science* (September 1994), p. 63.

[6] Edward D. Mansfield and Jack Snyder, "Democratization and War," *Foreign Affairs*, vol. 74, no. 3 (May/June 1995), pp. 79–97.

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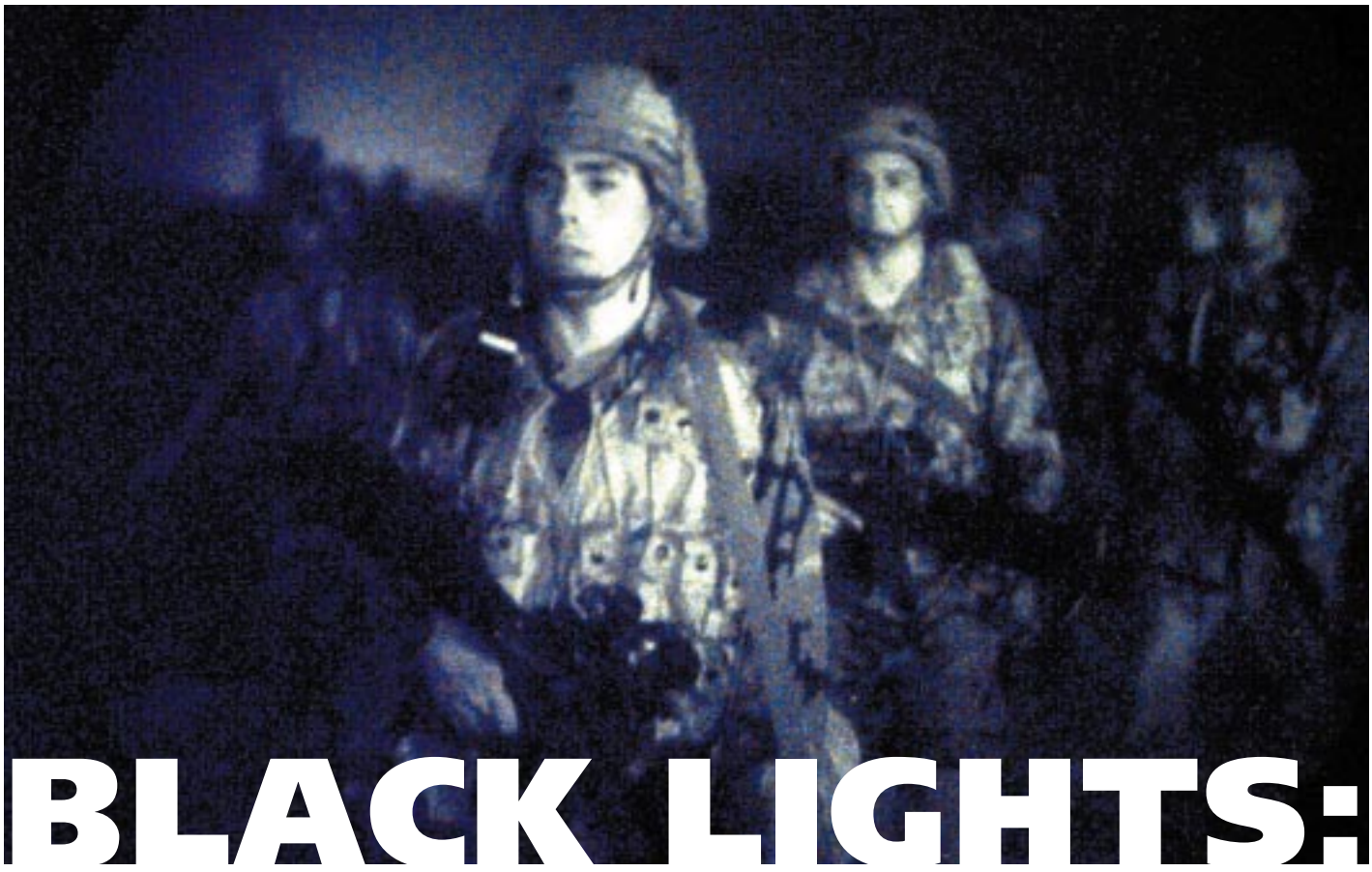


55th Signal Company, Combat Camera (Kyle Davis)

BLACK LIGHTS:
Chaos, Complexity, and the Promise of Information Warfare

By JAMES J. SCHNEIDER

THIRD PRIZE 96 REVOLUTION IN MILITARY AFFAIRS

James J. Schneider is professor of military theory in the School of Advanced Military Studies at the U.S. Army Command and General Staff College.

Arthur Clarke, a science fiction writer, stated that any sufficiently advanced technology is indistinguishable from magic. Although his point may be quaint it bears directly on the debate over the revolution in military affairs (RMA), which is long on description and short on explanation of future military technology. This is most evident in the promised wizardry of information warfare.

The magical quality of information warfare stems from a vague understanding of the nature of information itself. Since rational discussion is predicated on the explanatory power of carefully chosen conceptual terminology, the RMA debate can be furthered only to the extent that the issues are viewed from a common framework. Such a critical perspective allows one to see the true limits and powers of information warfare. At the

same time a closer look at information helps clarify two questions central to this debate: How do information technologies create a revolution in the means and methods of waging war? What objective criteria can help measure such revolutionary change?

Information and Control

Information and control represent two sides of the same coin. However, the discussion of information invariably neglects the control relationship. Control is regulating influence directed at some predetermined goal. It thus consists of two elements: the regulating influence of one agent or actor over another in that the former causes change in the behavior of the latter; and purpose in that influence is guided toward a prior objective set by the controlling agent. Since leadership provides purpose, direction, and motivation it is easy to see the important role that the military leader plays in the control and regulation of forces.

The notion of control exists on all levels of human activity and forms the basis of society. The primordial urge to dominate and regulate both nature and the environment puts control at the center of the evolutionary spiral. Domination over nature was realized through technology that put man on a path from the stone axe to the supercomputer. The ability to produce and use tools such as the axe changed human thought. As described by Burke and Ornstein, the "axe-making ability to do things in the proper order is one of the brain's many natural talents." Indeed, they describe it as the whole foundation of planning and problemsolving:

the present revolution is a military expression of the latest information revolution

. . . the axemaker talent for performing the precise, sequential process that shaped axes would later give rise to the precise, sequential thought that would eventually generate language and logic and rules which would formalize and discipline thinking itself. The newly dominant sequential talent of the mind was able to use the "cut-up-nature-and-control-it" capability to extract more knowledge from the world and then use that knowledge to cause further change. Thanks to the axemakers' talents and their gifts, things literally would never, at any time, be the same.[1]

The domination of nature through all aspects of technology brought change and difference to the forefront of control. The idea that two things are recognizably different or that things change over time is key to the theory of control—cybernetics—and the etymology of *control*, a term which comes from the Latin *contrarotulare*, meaning to mark similarities and differences. That changes and differences can be determined through comparison creates an inseparable link between control and information. Control develops information in two reciprocal ways. First, because control is goal-directed there must be a continuous comparison between the current and intended state. This ongoing comparison generates feedback to the controlling agent. Second, the controller engenders information in the form of adjustment instructions that feed forward to the controlled agent.

In warfare armies ultimately seek to dominate and control enemies by destroying their will. This struggle for control creates feedback information, as the status of armies is in constant flux. Staffs continuously process information and assess situations vis-à-vis overall mission objectives. Commanders feed forward information as "fragos" or other forms of instruction. The feedback of information as intelligence about self and enemy and the feedforward of information as instruction completes the reciprocal cycle of control. It is only through the process of control that information has meaning or indeed objective existence. Fundamentally, then, the object of information warfare is to destroy the ability of an enemy to control while protecting one's own.

Crisis and Revolution

Recognizing the relationship between control and information provides a perspective from which to regard RMA. The present revolution is a military expression of the latest information revolution. James Beniger has argued that this current upheaval is the fourth to occur. According to his view the natural evolution of living systems like armies creates a crisis in control. That crisis is resolved only after a sudden transformation in information processing and communication—an information revolution. The first crisis occurred four billion years ago as the issue of controlling reproduction arose. DNA—a complex macromolecule deoxyribonuchic acid with programming, decision, and control apparatus—became the first information revolution and resolved the crisis. It "organizes matter and energy at the most fundamental level of control [and is] not only the most basic of all control technologies . . . but also one whose capabilities are unlikely to be rivaled by technologies of our own making for many generations to come."[2] DNA is the basic building block of all genetic material. A one-inch strand holds as much information as 12,000 typed pages or twenty 500-page books. The nucleus of a single human cell contains five feet of genetic code, equivalent to 2,000 such books. DNA information

is structured to provide feedforward executive control over human life by shaping and organizing it. Soldiers constitute the basic genetic material in a combat organization. Education, training, and doctrine are military DNA that forms warriors and thus shapes the Armed Forces.

The second control crisis emerged 600 million years ago when living things began to move through space and time. It was resolved by an information revolution that resulted in the brain and central nervous system. Chemistry dominated life processes for four billion years until primitive electronics became important when creatures began to stir. "The first electronic systems possessed by primitive animals were essentially guidance systems, analogous logically to sonar or radar."[3] The brain and nervous system had two advantages. First, the brain provided executive control that feedforwarded information in a dynamic lethal environment. It also lent a staff control function that rapidly assessed information feedback from the outside world. Second, the electronic-based nervous system provided an entire feedforward-feedback cybernetic loop that was swift, clear, and reliable. Command and staff processes are basically poor models of the brain and nervous system. Evolution of the brain led to modern war and human society, thus creating a third control crisis.

Genetic control via DNA programming does have one shortcoming: the genetic blueprint is virtually fixed forever. The encoded information cannot be reprogrammed, but roughly 120,000 years ago humans began to reprogram themselves through the use of technology. Beginning with the rapid development of simple tools they were able to extend natural capabilities and circumvent their hardwired genetic code. By 10,000 B.C. the swift development of tools led to a crisis in the control of new technology and induced a third information upheaval, the agricultural revolution. In addition to the five basic mechanical tools—lever, wheel, pulley, screw, and wedge—cultural tools such as alphabets, numbers, laws, money, organized armies, towns, and states emerged to extend and enhance natural capabilities. The agricultural revolution culminated with the rise of civilization which was, in effect, a control system that sought to regulate four tasks. First, governance by a central government—normally headed by a king—integrated society through a feedforward system of laws. A primitive bureaucracy afforded feedback control. Second, security provided by armed force protected the state and its interests. The first RMA arose out of this development. Third, logistics through an economic system ensured relative efficiency in the extraction, processing, and distribution of scarce resources. Fourth, science—embodied initially in priests—ultimately sought to understand the world and extend human fitness beyond nature by new advances in technology. At the basis of this revolution was an increasingly homogeneous society bound together by verbal and written flow of information. At the same time writing and simple arithmetic provided requisite information processing capabilities to guide civilization to its next control crisis.

Black Light

This term refers to the invisible or "black" portion of the electromagnetic spectrum which is the domain of x-rays and radio waves. "Black lights" is used in another sense, however. In boxing a fighter may receive a hard shot to the head that causes a knockout. Some boxers report seeing "black lights" before they sink into oblivion: they see and become surrounded by a shimmering, glowing aura of darkness that is referred to in medical terminology as a "visual scotoma." The boxers are experiencing the paradox of being conscious of their unconsciousness. The reason for this phenomenon is that when the higher cognitive centers of the brain shut down, the lower areas, called the limbic system, kick in and preserve a primitive sense of awareness. Thus a kind of self-organization occurs among human systems in the same ways armies undergo self-organization after the initial clash of arms. Air theorists such as John A. Warden III and David A. Deptula develop an argument for "parallel warfare" that is based on a fundamental disregard of the ability of a military system to self-organize at lower echelons of command. The ability for self-organization greatly limits the practical utility of so-called parallel warfare. See John A. Warden III, "The Enemy as a System," *Airpower Journal*, vol. 9, no. 1 (Spring 1995), pp. 41–55; David A. Deptula, "Firing for Effect," *Defense and Airpower Series* (Arlington, Va.: AEF, August 24, 1995); and Michael E. Ruane, "Wisdom of 'Smart' Bombs Still Debated," *Philadelphia Inquirer*, August 14, 1996, pp. 1, 3.

Lightning in the Wires

For over 10,000 years civilization moved along at the pace of a walking man. Information travelled at the same speed. During this period the extension of human natural fitness had reached its limit inherent in existing technology. The constraint was that tools and toolmaking relied upon muscle power. However, technological advances during the Enlightenment replaced simple tools with complex machines which were characterized by the use of inanimate sources of power.

The steam engine was the first child of the industrial revolution. That advance, rather than

Combined arms exercise at 29 Palms, California.

2d Marine Division, Combat Camera (E.J. Young)

USS Key West.

U.S. Navy (James W. Olive)

being a revolution in its own right, was really a crisis of control. Since machines did not require muscle power, they were no longer controlled directly by a human hand. As a consequence whole elaborate control systems had to be developed to master machines, and thus cybernetics was born. "Gritty steam engines, not teeny chips, hauled the world into the information age."[4] Machines like the steam engine were quickly integrated into complex systems such as railroads. Because of their distributed nature and speed they had to be controlled in new ways. Just as nature resolved its second control crisis with an electronic-based nervous system, civilization resolved this new crisis with a similar electronic innovation—the telegraph.

The influence of the telegraph was profound. In one stroke it dealt with the problem of distributed control—mastering segmented cellular agents and activities separated by vast distances in space and time. For billions of years this problem prevented single-cell organisms from being networked into multifunctional distributed organisms. As with the nervous system electricity held the key. In the human body nerve tissue can sustain an information signal at 260 miles per hour, fast enough to regulate and control distributed agents like arms and legs and activities like digestion and reproduction.[5] Degrade this flow of information appreciably and death follows inevitably. Similarly the telegraph was able to network society, economic markets, government bureaucracies, and distributed military formations because information was able to move unambiguously, reliably, and swiftly. Of these, speed was the most important factor and established a quantitative milestone for the magnitude of the current information revolution.

Equating Information and Energy

In 1905 Albert Einstein formulated his theory on the relationship between mass and energy. We can postulate a similar relation between energy and information beginning with the seemingly trivial observation that no two objects can occupy the same space at the same time, a fundamental characteristic of mass. Similarly no two bits of information can occupy the same space at the same time; thus information has the physical dimension of mass.[6] This relationship suggests two basic and revolutionary implications for any rigorous theory of information warfare. First, as a form of mass, information flows. Second, the speed of its transmission marks a revolutionary

break with all forms of regulation and control prior to the middle of the 19th century.

The emergence of electricity as the primary means of regulation and control radically altered the physical characteristics of living organisms and human organizations. Before electricity these systems were characterized by their solidity: dense, segmented, cellular, and monolithic. A dense, solid system was controlled by information collected, processed, and distributed in a sequential and linear manner. In the military sphere armies behaved in a way described by the laws of solid mechanics. The so-called Lanchester equations, for example, are mathematical analogs for torque and linear force, key elements of solid mechanics.[7] Dense monolithic armies were controlled and regulated by the discrete and sequential movement of the written and verbal word. Armies fought in a manner described by Soviet military theorist G.S. Isserson as the "strategy of a single point."[8] They collided like huge bowlingballs on small point-like battlefields. Electronic-based control and regulation gave rise to parallel distributed information networks which could provide a continuous flow of information. Coincident with the development of black light (electromagnetic) technology, battlefield lethality grew markedly and led to a phenomenon known as the "empty battlefield"—the massive dispersal of troops across an ever expanding area.[9]

dense monolithic armies were controlled by the discrete movement of the written word

The use of railroads in preparing and mobilizing for war followed a distributed pattern that coincided with the parallel configuration of rail networks and urban grids. As warfare became total it became protracted. Militaries had to defend—and conquer—resource, agricultural, and industrial areas distributed throughout the depth of warring nations. The dense, solid pre-industrial military forces began to disaggregate and be distributed to accommodate physical characteristics of modern nation-states. Fundamentally, armies began to liquefy and flow to give rise to a basic characteristic of operational art: distributed deep maneuver. In this the continuous and fluid nature of electronic communications made operational art possible. Indeed the emergence of operational art is the first essential stage in the current RMA.

The last few paragraphs discussed the material character—the statics—of information and the armies it regulated. The continuous distributed nature of information supplanted the discrete, concentrated form. Information and armies coevolved, which imparted to military art a much more fluid quality ultimately revolutionizing the dynamics of war. In a fundamental way the physics of fluidity overturned the physics of solidity.

Another feature of mass is its ability to move through space and time. The most significant aspect of the control crisis and information revolution is the speed with which information was able to move. Only through the near-light speed of networked information can continuous control and regulation of distributed forces be maintained. Imagine, for example, the brain controlling limbs and life processes like digestion at the speed of a traveling horse: distributed control and regulation would be impossible and life would cease. Today, for instance, the continuous fluid and wavelike nature of lightning-fast information can control and regulate all aspects of full spectrum dominance as outlined in *Joint Vision 2010*.

The Telegraph

Although it may strike us as obvious now, it took a long while for the world's best inventors to transpose even the simplest automatic circuit such as a feedback loop into the realm of electronics. The reason for the long delay was that from the moment of discovery electricity was seen primarily as power and not as communication. The dawning distinction of the two-faced nature of the spark was acknowledged among leading German electrical engineers of the last century as the split between the techniques of strong current and the techniques of weak current. The amount of energy needed to send a signal is so astoundingly small that electricity had to be reimagined as something altogether different from power. In the camp of the wild-eyed German signalists, electricity was a sibling to the speaking mouth and the writing hand. The inventors (we would call them hackers now) of weak current technology brought forth the most unprecedented invention of all time—the telegraph. With this device human communication rode on invisible particles of lightning. Our entire society was reimagined because of this wondrous miracle's [wireless] descendants.

—Kevin Kelly, *Out of Control*

28th Public Affairs Detachment (William Cronk)

M–1 tank during Advanced Warfighting Experiment.

115th Mobile Public Affairs Detachment (David Burkle)

U.S. Air Force (Marvin Lynchard)

F–117 Stealth fighters.

The new fluid quality of information in support of operational art, expressed vividly in the control and regulation of distributed deep maneuver, fundamentally changed the physical character of warfare. The movement and flow of distributed mass armies and networked information often manifested a state of turbulence, eddies of disorganization and disorder that for the first time in the history of the art of war transformed the simple dense monolithic tactical structures into distributed complex operational organizations fighting at the edge of chaos.

Control at the Edge

The current RMA, which began in the last century, has led to the emergence of complexity as the defining characteristic of modern military organizations and operations. While complexity theory developed—especially over the last ten years—theorists have yet to recognize the exquisite complexity of modern military systems. Complexity is:

a characteristic of systems made up of more than two elements, suggesting intricacy of structure and process, but not randomness, sometimes with a high degree of regularity in their dynamics up to a point of transition; usually implying a reasonable degree of predictability and controllability, which may quickly pass through a state-change into what is or seems to be chaos, such as the effect of a single accident on rush-hour traffic, the outbreak of a riot in a crowd or prison, or the political upheaval in Eastern Europe in 1989 flowing out of long maintained stable states.[10]

In a complex system:

a great many independent agents are interacting with each other in a great many ways. . . . The very richness of these interactions allows the system as a whole to undergo spontaneous self-organization. . . . These complex, self-organizing systems are adaptive, in that they . . . actively try to turn whatever happens to their advantage. . . . Every one of these complex, self-organizing adaptive systems possesses a kind of dynamism that makes them qualitatively different from static objects. . . . Complex systems are more spontaneous, more disorderly, more alive. . . . Each of these systems is a network of many "agents" acting in parallel. . . . The control of a complex adaptive system tends to be highly dispersed. . . . A complex adaptive system has many levels of organization. . . . [They] *are constantly revising and rearranging their building blocks as they gain experience. . . . All complex adaptive systems anticipate the future. . . . They are active. . . . It's essentially meaningless to talk about a complex adaptive system being in equilibrium: the system can never get there. It is always unfolding, always in transition.*[11]

Complexity is a spontaneous consequence of imposing regulation and control on a highly distributed, fluid, chaotic state. Remove control in the military—the flow of information—and the force loses its cohesion and disintegrates. Because of its energy equivalence information performs a control function directly analogous to the effect of a magnetic field on a pile of metal filings. The magnetic field shapes the filings the way information shapes an organization. The velocity of the magnetic flux approaches the same speed of light as information moving through a communication network. The density and velocity of information flow objectively measures the complexity of an organization.

From the foregoing discussion it appears that complexity has a number of dimensions, but all of them ultimately turn on the way a complex

dynamic system uses information. A military system uses information five ways. The first is the way it describes itself and its enemy. The more information required the more complex the description. Second, a complex military system uses information to organize itself. Indeed, it is the energy aspect of information that forces and shapes an organization into a particular structure. Third, after the industrial revolution armies became algorithimically complex: the number of tasks or steps necessary to defeat an enemy grew dramatically. There is evidence of this in the rapid increase in the size of planning staffs beginning with the American Civil War and the increasingly protracted nature of modern war. The emergence of operational art in this period is another consequence of the algorithmic complexity of conflict. Wars could no longer be won with a few battles. Instead, commanders and staffs had to program and execute a whole mosaic of deep and protracted operations to defeat an adversary. Fourth, the logistics of information—acquisition, processing, and distribution—became complex. It was no longer possible for commanders to sit on horseback and gaze at battlefields. They and their staffs had to actively seek out information widely distributed across countless battles in deep theaters of operations. Since information has the physical dimension of mass it must be extracted, processed, and distributed like other material resources. In this regard it is like fuel for the mind with a kind of energy or octane rating: the greater the visual content the higher the octane level. The electronic battlefield seeks to provide the same total visual awareness. Because of the refining capacity of the computer, information can be processed to attain the highest level possible in the form of images.

since information has the dimension of mass it must be processed like other resources

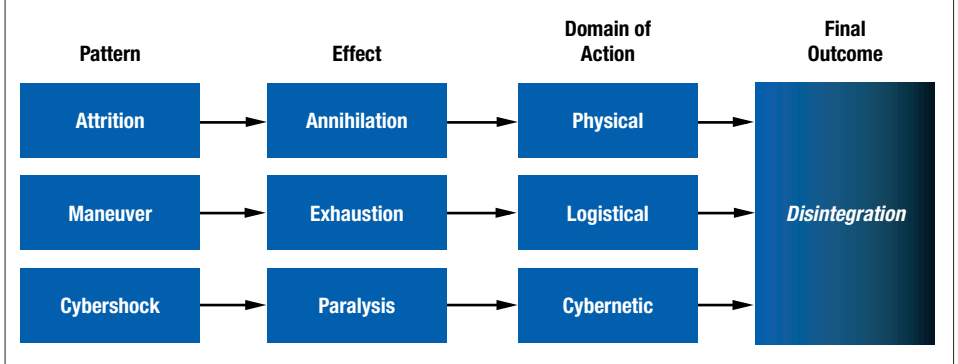
Finally, military technology makes modern forces complex in two ways. In the first place, since machines of the industrial revolution, unlike muscle-driven tools, relied on inanimate forms of energy like coal, steam, oil, and electricity the movement and sustainment of armies in the field drew increasingly on a complex network of distributed continuous logistics. The regulation of this form of logistics drove the information and control needs of modern forces. Second, technology itself is embedded with information. Not only do the new machines become more complex to use and produce, technology carries within itself an increasingly dense and complex pattern of its own evolution. Since technology extends the natural capabilities of humans, it gives them the potential for self-evolution and self-revolution by artificially changing their genetic code. Give a man a rifle and you have extended his natural lethal capability. Through technology humans become the editor and author of their genetic character. Emerging technologies contain all the information of newer, more advanced drafts of previous programs of instruction, which shapes human nature. The self-revolution of black light technology marks the beginning of a new book of evolution that cannot be comprehended with pre-industrial thinking: the grammar, language, syntax, and logic have become too complex. Similarly, wars can no longer be understood, discussed, and waged successfully in terms of this old paradigm. Complex armies inexorably lead to a revolution in the art of war.

Cybershock

Modern armies are complex systems that flow in a sea of information. They rush together like great rivers along wide, turbulent fronts. Destroy that fluid medium and an enemy is frozen and effectively paralyzed. This cybernetic paralysis is the essence of cybershock, the third form of warfare. Until the information revolution the art of war consisted of attrition and maneuver with attrition leading to annihilation and maneuver to exhaustion. Both forms of warfare were typically applied simultaneously, with attrition -> annihilation favoring the stronger side and maneuver -> exhaustion favoring the weaker. The rise of complex armies created a new array of vulnerabilities that information warfare now seeks to exploit.

Cybershock creates paralysis in five ways. First, through operations security, deception operations, and psychological operations an enemy

Attrition, Maneuver, and Cybershock



is denied complete information of its adversary and itself. Second, electronic warfare destroys enemy coherence and cohesion, basically freezing its nervous system. Third, active and intense reconnaissance and counterreconnaissance on every level blinds an enemy. Fourth, the shock of surprise places a tremendous burden on an enemy's nervous system by creating a general state of panic. Finally, the intensity and rapidity of friendly operations inflicts a kind of cybernetic stupor on an enemy. Ideally paralysis reduces an enemy to its component parts. It would be a serious error, however, to believe that one can defeat an enemy by paralysis alone. Patterns of war are complementary and mutually reinforcing. Their synergism develops an integrated posture of attack and defense meant to destroy complex military systems by attrition, maneuver, and cybershock (see figure). The outcome occurs in the moral domain with the disintegration and destruction of the will to fight. Failure to consider modern patterns of war in their totality only leads to defeat. The fact is that military systems are rarely destroyed exclusively by paralysis. As seen earlier one remarkable attribute of complex military systems is that they are spontaneously self-organizing.

A complex system like an army has its intelligence spread throughout itself. In war "each member reacts individually according to internal rules [training and doctrine] and the state of its local environment."[12] Armies in battle have a distributed mind or being that has a swarm or hivelike quality. Sun Tzu, the ancient philosopher of war, noted a similar phenomenon: "In the tumult and uproar the battle seems chaotic, but there is no disorder; the troops appear to be milling about in circles but cannot be defeated. . . . Apparent confusion is a product of good order."

Such ideas highlight an essential quality of modern forces—that overall systemic paralysis and disorganization can be offset to a point by self-organization and reorganization on lower levels of command. Thus militaries have the fractal quality of a *holograph*, a photo taken with laserlight that when shattered into pieces still retains the image of the whole in each fragment. There is thus a distinction between self-organizing military systems and biological systems. For an organism like the human body paralysis is total in the sense that a person with a broken neck does not experience sudden self-organization and spontaneous control of limbs. A joint force, on the other hand, may suffer complete cybernetic collapse—the analog to a broken neck—but spontaneously reorganize at lower echelons and continue with its mission. The efficacy of the German idea of *auftragstaktik* is based on the self-organizing ability of subordinate leaders and units.

The significance of self-organization for information warfare should be evident: destroying a disorganized enemy may depend ultimately on its physical—perhaps protracted—defeat in detail. If an enemy still has the will to fight, its fate will have to be decided with a simple bullet rather than a complicated piece of hardware. Iwo Jima and Okinawa remind us how rare and sweet victories like the Gulf War are. Sleight of hand in technology and information warfare should not conjure up false hopes or visions of future war. At the same time the Armed Forces must unshackle the limits—and challenge the promise—of information war. In the end wars are won by soldiers, not by magicians. JFQ

NOTES

[1] James Burke and Robert Ornstein, *The Axemaker's Gift* (New York: Grosset/Putnam, 1995), p. xvi.

[2] James R. Beniger, *The Control Revolution* (Cambridge: Harvard University Press, 1994), p. 54.

[3] Fred Hoyle, *Man in the Universe* (New York: Columbia University Press, 1964), pp. 24–25.

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[5] William F. Ganong, *Review of Medical Physiology*, 8th ed. (Los Altos, Calif.: Lange Medical Publications, 1977), p. 29. I am indebted to Leah J. Stevens for this key insight.

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[7] James J. Schneider, "The Exponential Decay of Armies in Battle," *Theoretical Paper No. 1* (Fort Leavenworth, Kans.: School of Advanced Military Studies, April 23, 1985).

[8] James J. Schneider, *The Structure of Strategic Revolution* (Novato, Calif.: Presidio Press, 1994), pp. 11–12.

[9] James J. Schneider, "The Theory of the Empty Battlefield," *Journal of the Royal United Services Institute* (September 1987), pp. 37–42.

[10] Roger A. Beaumont, *War, Chaos, and History* (Westport, Conn.: Praeger, 1994), p. xiv.

[11] M. Mitchell Waldrop, *Complexity: The Emerging Science at the Edge of Order and Chaos* (New York; Simon and Schuster, 1992), pp. 11–12, 145–47.

[12] Kelly, *Out of Control*, p. 22.

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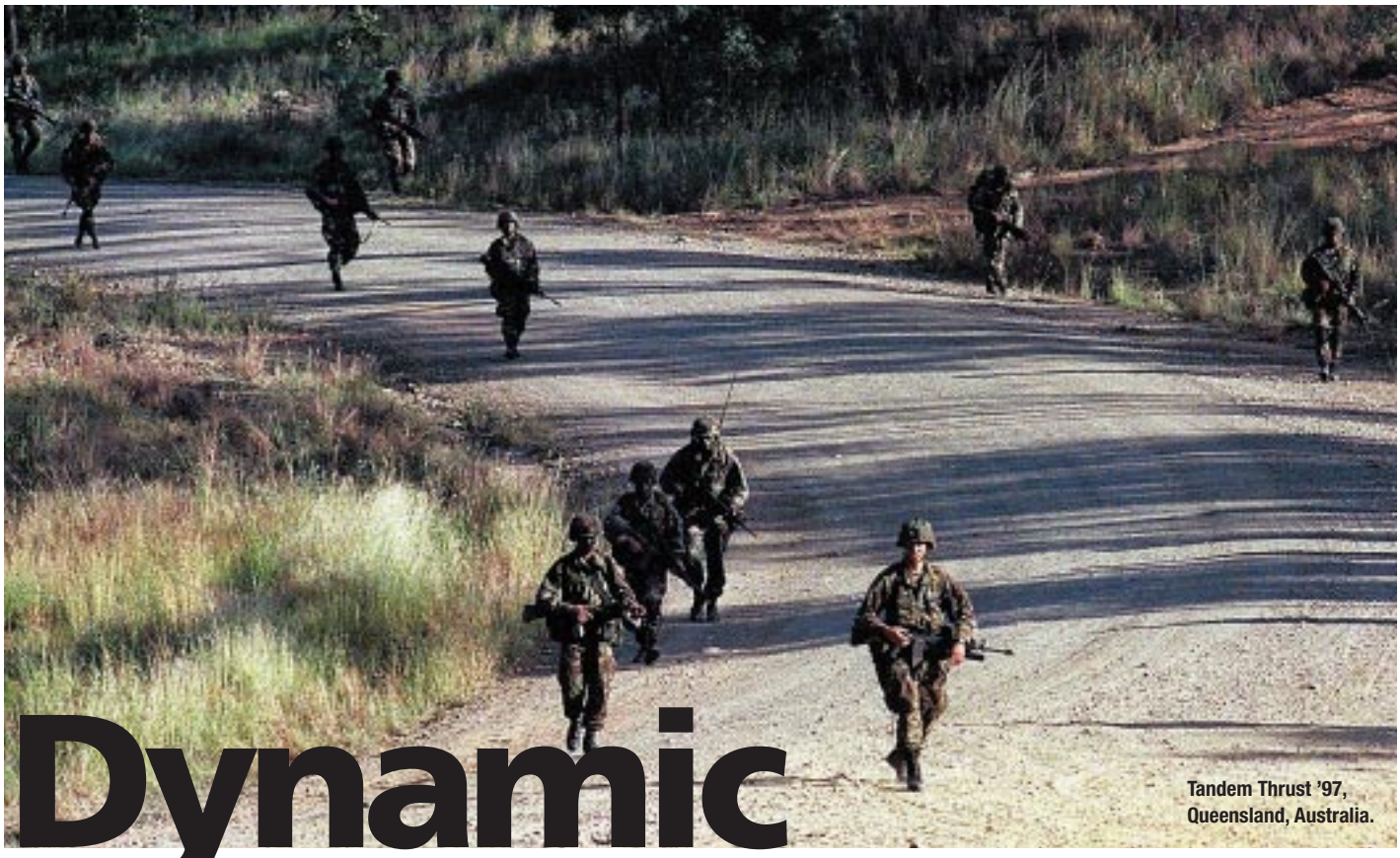

Tandem Thrust '97, Queensland, Australia.

DOD (Gary A. Bryant)

Dynamic Inter-Dimensionality: A Revolution in Military Theory

By ANTULIO J. ECHEVARRIA II

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The debate over the revolution in military affairs (RMA) has become one of whither rather than whether. Most commentators agree that profound and inescapable changes are taking place in warfare. The discussion now focuses on defining this revolution more precisely, determining the extent and type of changes that it will effect in the near and long term, and what if anything should be done about them. Much effort has gone into determining how technology will alter the conduct of war in the information age from the National Command Authorities to the individual soldier. Yet no one has addressed the central issue of how this revolution will affect military theory—the foundation of doctrine. The exploitation of new technology demands a corresponding revolution in military theory that explains war as a broad-based,

dynamically interactive continuum. It must provide a holistic view of war that represents its varied dimensions and accommodates new ones which emerge; and, similar to the paradigmatic shift that is occurring in science, it must depict the normal state of war as vigorous interaction and continuous change rather than static equilibrium. This approach must in turn form the conceptual framework for future military doctrine.

Before proceeding, the terms *military thought*, *theory*, and *doctrine* should be defined. For our purposes, military thought consists of the aggregate of developments, theories, approaches, perceptions, patterns, and frameworks (paradigms) that belong to a particular era, community, or person. It responds to and borrows from values and assumptions in its socio-cultural milieu and represents the solution or analysis of military problems in the abstract. Military theory involves the historical observation and the systematic study of organizations, strategies, tactics, techniques, and procedures from antiquity to the present. It educates warfighters and policymakers alike and also provides a basis for developing doctrine that in turn creates a common philosophy and practice for solving problems in the physical world, either through fighting or other means. Doctrine, in sum, is the accepted canon: it represents what the institution teaches officially and tacitly. It remains authoritative in nature but requires judgment when applied. Doctrine also shapes dialogue, defines capabilities, accommodates threats, and influences force disposition and resource allocation.

the ability to strike simultaneously will continue to blur distinctions among levels of war

Professional publications such as Field Manual 100-5, *Operations*, Field Manual 100-6, *Information Operations*, U.S. Army Training and Doctrine Command Pamphlet 525-5, *Force XXI Operations*, Fleet Marine Force Manual-1, *Warfighting*, Air Force Manual 1-1, *Basic Aerospace Doctrine of the U.S. Air Force*, and Joint Publication 3-0, *Doctrine for Joint Operations* reflect common warfighting philosophies for specific services or forces, functions, and levels of warfare. They thus draw from accepted or newly developed theories or concepts to describe official practice relating to current or potential problems. This theory in turn reflects concerns in military thought, such as how to incorporate expanding capabilities of information-age technology into all types and levels of warfare. This article considers the impact of new theory on FM 100-5.

Dimensions of War

RMA has introduced a number of new conditions into the conduct of war. For one thing, the ability to strike simultaneously throughout an ever-expending battlespace has made sequential operations all but obsolete. This simultaneity will continue to blur the already tenuous distinctions among tactical, operational, and strategic levels of war. Moreover, future operations will involve an indefinite extension of the battlespace—the depth, breadth, and height of a battlefield—brought about by increases in the range, accuracy, and lethality of new weapons systems. This expansion reflects an evolutionary tactical trend accelerated by rapid technological advances. It threatens to remove safe areas from the battlefield, intensifying danger and uncertainty. Future conflicts might well consist of a single, continuous strike lasting hours, days, or even months rather than a series of battles or campaigns. Operations in Grenada, Panama, and Kuwait hint at what simultaneous or near-simultaneous strikes can achieve.

Digitization is transforming command and control on the tactical, operational, and strategic levels. Digital systems are rendering battle command nonhierarchical. Organizations process and disseminate information in nontraditional patterns so that others can exploit it in a timely manner. Situational awareness will soon become automatic and the transmission of the commander's intent instantaneous. Digital displays will soon depict individual vehicles and weapons systems with precise logistic and geographical information, all constantly and automatically updated and shared with other systems. The goose egg will become obsolete and unit boundaries, combat formations, and battlefield graphics unnecessary.

In addition, information-age technology is making the environment in which future military operations occur more dynamic and unpredictable. It renders national economies more sensitive to global developments, heightens cultural and political awareness on the part of world populations, and fuels radical movements that promote world-wide political fragmentation and destabilization. Information-age technology can deliver the effects of military actions, large and small, to a global audience almost immediately. Images of war and peace—either real or contrived—can decisively influence national will or public opinion before authorities confirm or repudiate their authenticity. Paradoxically, a flood of real or near-real time information puts greater demands on intelligence gatherers and decisionmakers alike, forcing them to rely more on their intuition and Clausewitzian *coup d'oeil* than ever before.

Combat Camera Imagery (Paul A. Hawthorne)

Airborne battle staff during Deny Flight.

Since the classical age enemies have waged war in five overarching dimensions—political, social, technological, operational, and logistical—which approximate the four elements of national power—political, socio-psychological, military, and economic—and indeed serve as conduits for directing that power. Neglecting one can lead to catastrophic defeat as in the case of the infamous Schlieffen Plan, which dismissed the German political situation as irrelevant, or Hitler's war with the Soviet Union, which egregiously underestimated economic and socio-psychological elements.

The political dimension consists of political aims and politics as a process. Political aims, whether manifested in terms of protecting national security interests, an aggressive policy for economic expansion, a commitment to worldwide religious or ideological conversion, a desire for retaliatory assassination, the promotion of state-sponsored terrorism, or mere entertainment, have always directed war, though not always coherently. In addition, politics as a process influenced by culture, geography, and personality has always affected the direction of war, though not always constructively. While the decisionmaking that Tartar bands used to formulate policy might appear less sophisticated than those of modern states (which is debatable), they proved no less effective in developing strategies and direction for military force in pursuit of political goals. These objectives emerged as a product of resources available to the Tartars, their geopolitical position as a composite of Turkish and Mongol nations located in Central Asia, their nomadic culture and traditions, and the influence of Islam. FM 100-5 recognizes the role of the political dimension in directing force to achieve strategic goals but does not discuss the influence of politics as a process on the planning or execution of military operations.

The social dimension—the attitude and the commitment of people—also remains essential to warfighting. The Peloponesian and Punic Wars demonstrate the importance of popular support even when only limited segments of society actively participate in combat. The significance of the social dimension receded to a certain extent in the medieval era when knights assumed the principal roll as warfighters. It emerged again in the 17th century as armies grew larger, levelled in the 18th century "cabinet wars" which relied somewhat less on popular support, and grew once again in the 19th century as states moved toward the concept of a nation in arms. Indeed, the increase in army size combined with the emergence of mass politics has made the cultivation, if not manipulation, of public opinion essential in warfighting. FM 100-5 recognizes the "attitude and commitment of the populace" as the human (physiological, psychological, and ethical) dimension of war.

Technology affects every dimension and all levels of warfare. It interacts with culture and physical events in time and space to influence the duration, nature, shape, and outcome of conflict. Technological advances, while always important, take on greater significance when a "gap" exists between one force and another, as the Battle of Omdurman demonstrated in 1898. Such advances also produce military technical revolutions that can lead to larger, more inclusive RMAs such as the one launched by Gustavus Adolphus in the early 1600s. Gustavus actually capitalized on the effort by Maurice of Nassau to effect military reform in the 1590s. Maurice developed a system with linear formations, discipline, drill, and volley fire based on the Roman model to which Gustavus added pike and musket, the perfection of the salvo, lighter and more maneuverable field artillery, and smoke and direct-fire suppression in the attack. This led the Swedish king to many victories and the title Father of Modern Warfare. It also affected the strategic, organizational, and socio-political realms of warfighting, resulting in an early modern European RMA. FM 100-5 addresses the role of technology in warfare and doctrinal development, but not as a warfighting dimension; and it confuses the roles of doctrine and theory in the exploitation of technology. Doctrine never truly initiates or drives change per se but attempts to channel or focus it through the identification of appropriate warfighting tasks. The relationship between doctrine and technology is

subsumed in the reciprocity between military theory or concept and desire for—or emergence of—enhanced or increased capabilities.

The operational dimension refers to the conduct of war. It consists primarily of attempts to dominate the physical space of the battlefield with combat power and to destroy an enemy's will to fight. From antiquity to the modern age, commanders and staffs have conceptualized the battlefield primarily in physical terms. Great captains from Alexander to Napoleon generally had to consider only two dimensions—breadth and depth—in deploying forces. But with the 20th century aircraft had extended battlespace to three dimensions, and submarines arguably added a fourth. Spacecraft now make it five. In addition, FM 100-5 recognizes the operational dimensions of tempo, depth, and synchronicity. It must go one step further, however, and acknowledge information and force as warfighting dimensions as well.

The logistical dimension has evolved from literally living off the land and ad hoc foraging to intricate if cumbersome depot/supply and push and pull systems. Subsistence, accouterment, ammunition, fuel, and transport provide the stuff of war, the lifeblood of armies. These essentials have affected the size, range, and potency of forces throughout history. Consumption rates for fuel, ammunition, and water have increased more than ten-fold since 1945. A division consumes as much today as a field army during World War II. The successful projection of force across the globe also depends on logistic and support infrastructures such as airfields, seaports, and ground transportation networks. Had Iraq established even a modicum of control over Southwest Asian sea and airports through alliances or other means, coalition forces would have found it much more difficult to execute Desert Storm. Until alternatively powered vehicles and weapons are developed, logistics will remain the decisive problem for Force XXI operations. FM 100-5 recognizes that logistics operations are a critical element of warfighting, devoting an entire chapter to the subject. It does not, however, address logistics as an interactive dimension.

theoretical frameworks have remained linear—closed, balanced systems oriented on sequential events

New Trends

Although the nature and significance of each of these dimensions has varied from era to era, each has clearly remained essential to the conduct of war. Commanders have deliberately, though not absolutely, influenced activities within these dimensions to impact their own and the enemy's combat power. However, due to limitations imposed by human beings trained—and thus constrained—to think in terms of static, two-dimensional maps and symbols, full integration of these dimensions into a comprehensive theoretical framework has not yet occurred. Accumulating dimensions one upon another has only made visualization of the battlefield more complex instead of more sophisticated or complete. In short, theoretical frameworks have remained linear—closed, balanced systems oriented on sequential events.

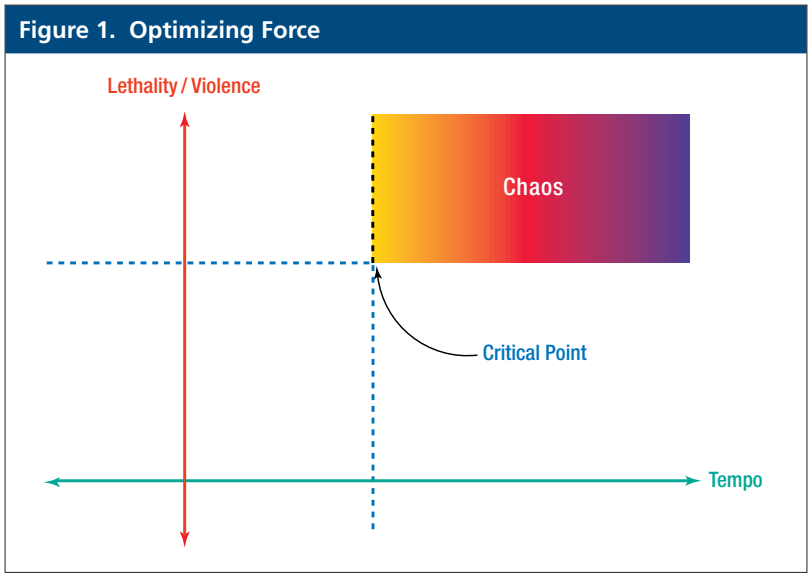
RMA has also made it possible—and thus necessary—to view military operations through two newly emerging dimensions for which current theory does not account. We can now effect action across a broad spectrum of options within the domains of information and force (lethality and violence). While armies have traditionally conducted military operations within these realms, the dynamic and fluid conditions of 21st century warfare have made deliberate consideration and doctrinal recognition of them essential.

Obviously, the increased speed and precision of modern weaponry make information—the heart of RMA—an essential dimension of warfare. Commanders must win the information war to succeed today. Domination of the electro-magnetic spectrum will play a critical part in war as will position cloaking and deception. However, we must not treat information as a physical dimension like land, sea, or air. Information superiority does not function like air superiority.

Additionally, non-lethal weapons including sticky foam, antitraction materials, infrasound, anesthetics, and microwave transmitters provide a range of options under force application. Within certain limitations, commanders can now decide what level of lethality to introduce in an operation as well as how and when. However, recent observations indicate that there are numerous glitches to be worked out before such weapons prove truly useful. Nonetheless, by deliberately raising levels of violence and tempo we can attack the "state of being" of an enemy, ultimately pushing it into chaos where its rate of tactical, operational, and strategic errors increases decisively.

The fact that linear forms of conceptualization have dominated military thinking throughout history should not surprise us. Our educational institutions have taught us to convey and process information in a rigidly structured, step-by-step, left-to-right, or top-to-bottom sequence in which input remains proportional to output. We study major disciplines like economics, sociology, and psychology separately, as closed systems, as if knowledge and developments related to one have no bearing on the others. Each field presupposes equilibrium as its norm and flux as an aberration.

Figure 1. Optimizing Force



Likewise, warfighting schools have taught commanders to view battle as sequential, as a relatively closed system with identifiable start and endpoints and comprised of forces that produce proportional effects. For example, to facilitate command and control, military missions began with a specific not-later-than (NLT) start date and time, a set of clearly delineated phases or phase lines, and a presumably attainable goal or objective, also generally associated with a NLT date and time for its accomplishment. Moreover, the desired outcome or endstate of a mission drove the amount of force required; that is, successful attacks usually require a 3:1 force ratio of attacker to defender. Although we recognized such measures as artificial, until the advent of information-age technology few reasonable alternatives for exercising command and control and calculating force disposition existed. Until recently, the wherewithal to calculate the myriad outcomes of nonlinear systems simply was not available. A small change in a nonlinear system can produce an exponential number of new outcome possibilities, each of which might branch into any number of additional likelihoods. Each subsequent path and combination would then require thorough mathematical investigation that might literally take a lifetime to calculate. Consequently, we embraced linear analytical systems not only because our intellectual conditioning led us in that direction, but for practical reasons as well. Thus military thought, like its civilian counterpart, became inseparable from closed, well-ordered systems, from structure and sequence, from balance and equilibrium.

Unfortunately, the nature of war doesn't fit in the limits of a linear system. As Clausewitz explained, war has a "dual" nature consisting, in the first place, of several internal constants—fog, friction, chance, uncertainty, physical exertion, danger—that render it unavailable to mathematical calculation. Such imponderables result from the interplay of opposing forces, nearly simultaneous and continuous action, and propensity toward escalation. The second nature of war, a chameleon-like character according to Clausewitz, consists of a capacity to assume various forms over time as enemies introduce new weapons, tactics, techniques, and procedures. Thus warfighting remains in a constant state of flux. A successful approach in one era may yield little in another. Combined, the internal and external characteristics of war make it a complex of independent and dependent variables that interact in unexpected ways to produce multiple outcomes in a range of dimensions.

Inter-Dimensionality

To grasp this interplay, military theory must assume an inter-dimensional approach. Inter-dimensionality is more than adding one dimension to another: it requires rotating, translocating, and transforming axes in multiple ways to examine the effects of various combinations of events at different times (figure 1). This sort of thought process stretches intellectual capacities to the limit. However, advances in information-age technology can assist in multidimensional conceptualization by allowing us to construct computerized models to simulate the battlefield (for example, JANUS) and rapidly wargame scenarios from as many perspectives as can be built into the system. On the other hand, such simulations will probably never accurately replicate Clausewitz's imponderables which by definition defy quantification. Multidimensionality must thus include the commander's intuition and *coup d'oeil*. Finally, we must never use it to predict, only to problematize.

Hitherto, theory has not addressed the inter-dimensional nature of warfighting or war itself as a broad-based, interactive, and dynamic continuum. Military theorists have always viewed war in a segmented and compartmentalized fashion. They have analyzed warfare by breaking it into its essential parts and classifying it. Such analyses have addressed issues ranging from the complex relationships between politics and strategy to the practical conduct of war—whether conventional, nuclear, or some other variety. Overall, these analyses have contributed immensely to the way we see war. However, with the notable exception of Clausewitz's *On War* which remains incomplete, these contributions either left their subject

in a disassembled state or never approached war as an interactive whole in the first place.

A brief and by no means conclusive review of their efforts will serve to illustrate the major trends of military theory. Vegetius, like others, approached war to reform its methods of conduct. His classical work, *On Military Affairs*, enjoyed more influence a millennium after it was written, but suffered from numerous misunderstandings and impracticalities concerning weapons systems of the period. Machiavelli, too, advocated military reform; he developed principles derived from the ancient Roman model and insisted on applying them to Renaissance warfare. Montecuccoli concerned himself with reducing military expertise to fundamental rules and incorporating them in a theory of war. Clausewitz, perhaps the most profound military thinker, came nearest to actually developing such a theory of war, one that reflected the multidimensional and dynamic character of conflict. Due to an untimely death, his work went unfinished and remains largely misunderstood. Basil Liddell Hart, deeply affected by the catastrophic loss of life in World War I, also sought to reform the conduct of war. He developed an indirect approach to strategy which he argued would be more effective and less costly than head-on counterparts. Edward Luttwak's historical studies provide thorough and painstaking analyses of the way that governments from Rome to the Soviet Union developed and executed strategy; however, his work amounts to a theory of strategy as a process rather than of war as a phenomenon. Not surprisingly, the views of each of these thinkers reflect one or more of the intellectual undercurrents of their own day as well as their experiences. Our efforts to place war within a theoretical framework rarely transcend their socio-cultural milieu. On the contrary, it is that very milieu which provides the substance and context of meanings for developing and communicating ideas. Paradigm shifts and intellectual revolutions within the larger milieu will often, in one way or another, inform military theory.

intellectual revolutions within the larger milieu will often inform military theory

The scientific community is on the verge of a paradigm shift. Information-age technology in the form of computer simulations and math coprocessors makes nonlinear calculations a matter of routine. Scientists in every field have begun to re-examine or in some cases jettison traditional linear models in favor of more dynamic, open-ended, nonlinear ones. Consequently, information-age technology has launched a scientific revolution equal to that which brought 16th and 17th century Europe from a theologically to a mathematically described universe. This revolution shatters the paradigm of a "clockwork universe" expressed in Newton's laws of motion whereby equilibrium formed the natural state of the physical world.

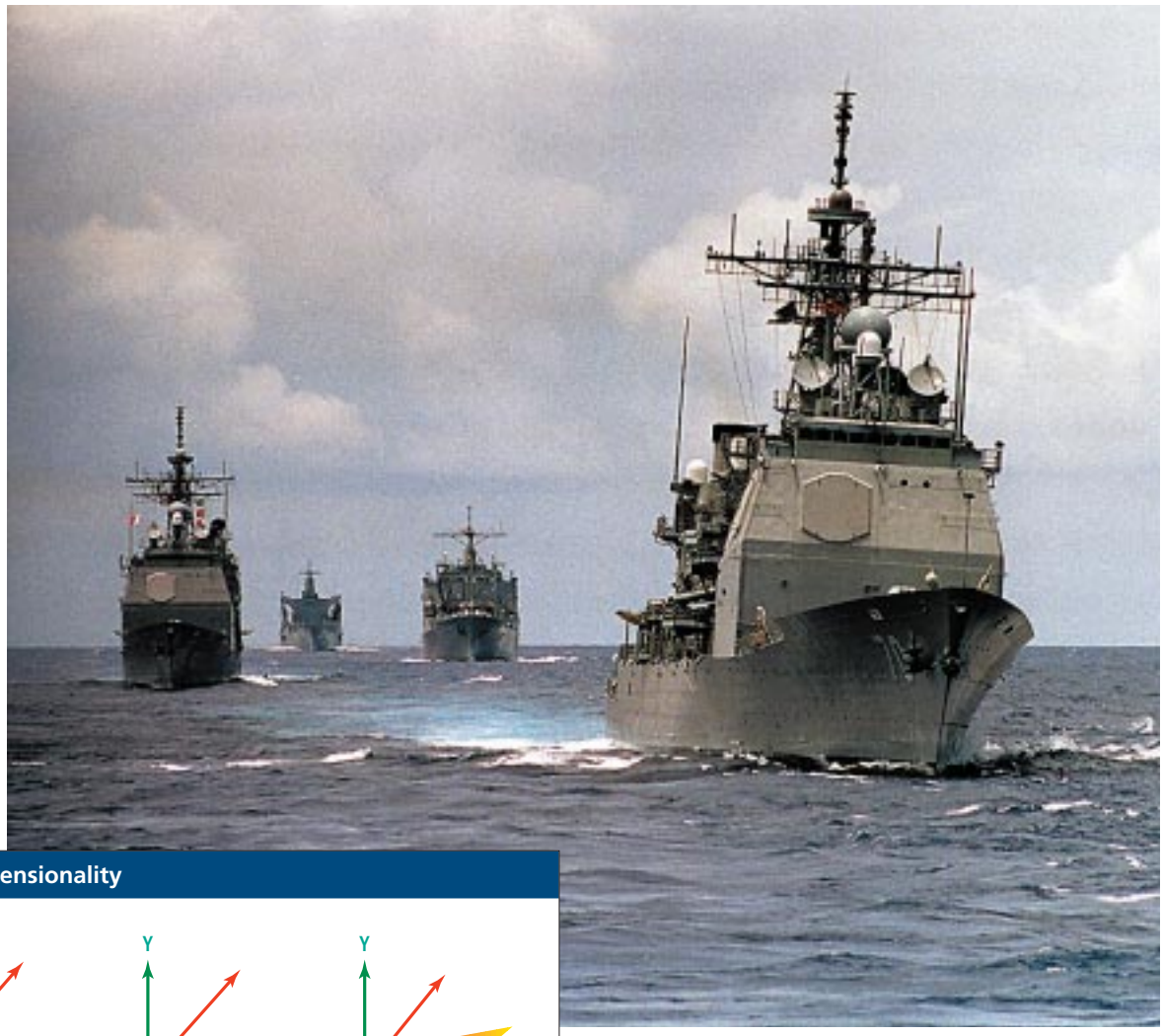
This new paradigm assumes that continuous change and dynamic interaction, rather than equilibrium, represent the normal state of the universe. It employs an interdisciplinary rather than segregated approach to science, borrowing from disparate disciplines to explain the dynamic nature of physical phenomena. The fundamental principles of this new paradigm maintain that:

- every system component, no matter how small or insignificant, plays a part in deciding the outcome; thus we must treat systems holistically rather than focusing only on key players
- predictable and nonpredictable phenomena coexist and interact in the physical world to produce complex networks with too many variables or relations to consistently calculate outcomes
- a small change in the input to a system can result in disproportionate effects
- systems—individuals, armies, bureaucracies—tend to evolve toward greater complexity
- complex adaptive systems spontaneously reorganize themselves when confronted with challenges; at such moments systems are generally found at their most innovative and creative.

This paradigm shift offers unique opportunities to theorists. We now possess the tools and intellectual framework to construct a theory of warfare that more accurately reflects the dynamic and inter-dimensional nature of conflict. A new theory in turn will lead to a better understanding of war and a more realistic representation of warfare in professional study and instruction. Of course, as Clausewitz warned, no theory can predict the outcome of a conflict.

Historical Perspectives

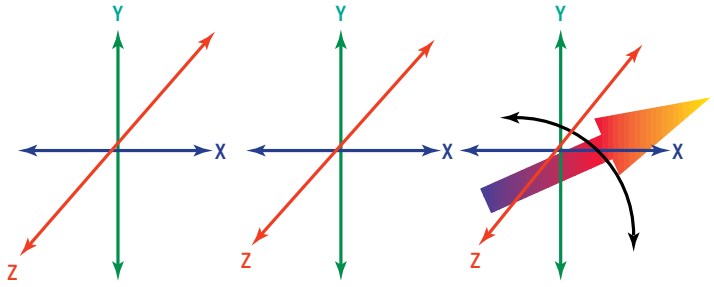
New military theory contributes three additional characteristics to an understanding of war. First, it proceeds with the assumption that war operates as a continuum. In other words, war as a state of being exists before the first clash of arms or official declaration of war and may continue beyond the final treaty or cease fire. We identify September 1, 1939 and August 15, 1945 as the start and the conclusion of World War II; yet these dates omit a great deal. They do not account for Germany's military build-up in violation of the Versailles Treaty, the invasion of the Rhineland, the annexation of the Sudentenland and Czechoslovakia, or the so-called *Anschluß* with Austria. They also exclude Italy's conquest of Ethiopia and Japan's invasion of Manchuria. In fact, to fully understand the conditions that gave rise to World



USS Lake Erie leading ships in the Pacific.

U.S. Navy (James W. Olive)

Figure 2. Multi-dimensionality



War II one must go back at least to the end of World War I, to the provisions of the peace treaty, the issue of war guilt and reparations, the global depression of the 1930s, and the ultimate failure of the Weimar Republic. Moreover, the struggles between the Soviet Union and the West which ushered in the Cold War period had their origins in World War II. Key players changed roles slightly, but a new state of war began to emerge before, and continued well after, 1945. Thus we might extend Clausewitz's definition of war as a "contest between opposing wills" to include the idea of war as a contest between opposing wills expressed violently via aggressive channeling of national power (see figure 2). Indeed, war becomes nothing more than a deliberate focusing of national power to achieve an objective.

Second, the multiple dimensions of war interact dynamically. Events from one flow into others. Decisions made in the political domain can impact events in the operational dimension and vice versa. Bismarck's decision to storm the fortress of Düppel in the Schleswig-Holstein War of 1864 emerged purely from a desire to acquire political clout by demonstrating Prussian resolve. Political circumstances in early 1916 dictated the execution of the Somme offensive at a time and place—one of the strongest points in the German line—that neither Douglas Haig nor Ferdinand Foch wanted. In each case, decisions made in the political domain directly affected events in the

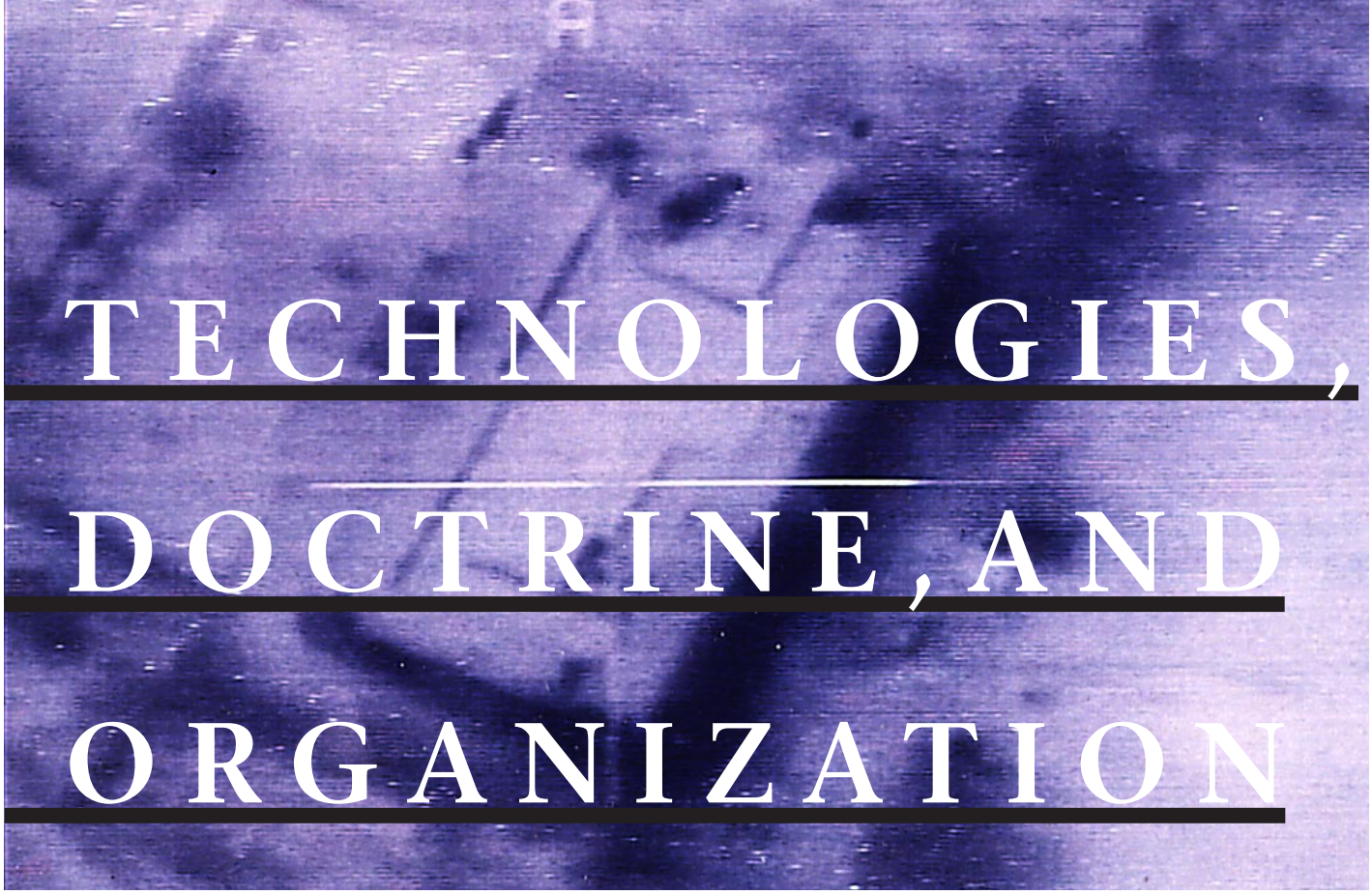
operational dimension. On the other hand, the battle of Antietam (Sharpsburg) in 1862 is a case of operational events affecting other dimensions. Antietam ended in a tactical draw when McClellan failed to take advantage of several opportunities to annihilate Lee's army; but clever manipulation of the outcome by Lincoln yielded a strategic, political, and moral victory for the North. Antietam resulted in the continued isolation of the South from Europe, prevented Maryland's secession from the Union, and gave rise to a moral victory with the Emancipation Proclamation a few days later. Thus an essentially indecisive event in the operational dimension produced conspicuous effects in the logistical, political, and social dimensions of war.

Third, all events in war have weight; even the least can have disproportionate effects. For example, the personality of a commander looms as large as the size and preparedness of an army. Prussofilia on the part of Czar Peter III saved Frederick the Great from probable defeat in 1763. Peter, a prince of Schleswig-Holstein, an honorary general in the Prussian army and a long-time admirer of Frederick, assumed the throne on the death of Empress Elizabeth and reversed Russia's political course away from participation in the Seven Years' War, an endeavor which many in his court considered little more than a near-ruinous expedition to further the glory of an ally, Austria. The fortuitous discovery of Lee's "lost order" (special order 191) by Union troops before the battle of Antietam gave McClellan the information he needed to attack and destroy the Army of Northern Virginia. Nonetheless McClellan's dilatory nature saved Lee from utter defeat. Likewise, an event as simple as an undelivered message can be catastrophic. Soldiers of the Royal Newfoundland Regiment failed to get word that their attack on the afternoon of July 1, 1916, the first day of the Somme offensive, had been canceled. Consequently, they advanced unsupported and in single-file through narrow gaps in their own wire that were covered by German machine guns. The regiment suffered 85 percent casualties launching an attack that should not have occurred.

A dynamic, inter-dimensional approach to military theory requires corresponding changes in doctrine. Specifically, doctrinal vehicles such as FM 100-5 must stress the interconnectedness of the dimensions of war. Doctrine forms the basis of the Army's warfighting philosophy and instructs, guides, and educates military professionals of all services. Accordingly, it must clearly convey the nonlinear nature of war and recommend suitable tactics, techniques, and procedures. It must encourage a multidimensional approach to military problems and emphasize that wars do not occur in a vacuum.

The changes wrought by RMA will likely make warfighting more rather than less difficult. The means, environment, and dimensions of future war continue to transform it. To keep abreast of such changes, we need an integrative, multidimensional approach to military theory—one that remains relevant to developing practical warfighting doctrine. Thus theory must approach warfare as a phenomenon comprised of continuous change and dynamic, interactive dimensions rather than as a closed system predicated on the notion that balance and equilibrium represent the natural state of the universe. Thanks to revolutionary developments in computer-age technology and a shift in scientific thinking, we have the means to develop, sustain, and use an inter-dimensional approach to war. Doing so amounts to nothing less than a revolution in military theory. JFQ

This article is an edited and abridged version of an entry that received the prize for the best submission by a junior officer in the 1996 *JFQ* "Essay Contest on the Revolution in Military Affairs" sponsored by the National Defense University Foundation.



DOD

TECHNOLOGIES, DOCTRINE, AND ORGANIZATION for RMA

By JAMES K. MORNINGSTAR

115th Mobile Public Affairs Detachment (David Burke)

Javelin anti-tank weapon system.

To fully realize the revolutionary potential of new military technology we must develop doctrine that incorporates innovative operational concepts as well as organizational structures that are joint, deployable, and informationally smart. Technological upheaval is already reverberating throughout many critical military functions. As a result doctrine must reflect changes in time and space relationships on the battlefield, the balance between capability and manpower, and the nature of command and control. This article examines these changes and organizational structures capable of integrating new technologies and maximizing their warfighting potential.

To understand the need for change, we must first grasp its causes. New technologies are reconstructing the world. Just as military institutions reflect society, they also experience change. Computers, digital technology, and improved performance of equipment are creating enhancements in many areas. Tomorrow we will shoot, move, and communicate differently than we do today.

Increasing the Tempo

Perhaps the most visible effect of modern mechanics is firepower. The Gulf War left us with images of smart missiles flying thousands of miles before destroying selected targets. But the lasting importance may be their impact on operational

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tempo rather than their destructiveness. To appreciate the potency of precision munitions, one has only to compare the amount of ordnance employed to destroy targets in past wars. While it took several hundred bombs to destroy a bridge during World War II it takes only one guided bomb today. This simple fact has tremendous repercussions for speed in combat. In World War II it took an extensive air campaign to destroy several bridges; a few aircraft can do it in hours now. Commanders must be ready to move to the next phase of operations much faster than they did fifty, thirty, or even ten years ago. Increased accuracy has robbed planners of the time to adjust to evolving conditions.

During Desert Storm we attacked Iraqi defenses with a preparatory bombardment of high-explosive artillery rounds followed by concentrations of conventional rounds from Abrams tanks and Bradley fighting vehicles. Physically the attack was a refined version of the sort conducted in the fields of France over seventy years earlier. In the application of weapons, only the addition of attack helicopters would have distinguished it from *Blitzkrieg* in 1939. Allied forces were overrun by the Germans because their leaders were accustomed to a horse cavalry and foot soldier pace of combat. In the future, anyone whose operational tempo is at the dumb bullet speed of battle will fall behind in a combat parade where precision munitions call the cadence.

precision munitions must lead us to revise our doctrinal definitions of battlespace

Precision munitions must lead us to revise our doctrinal definitions of battlespace. Ground forces have always been responsible for the terrain that they effectively covered with fire. In the past the range of weapons, the probability of kill per weapon, and the number of systems available limited that effectiveness over space. A tank company commander in the defense would position his vehicles to mass fires within range on a particular piece of ground where an enemy was likely to cluster. He would have to rely on terrain or obstacles to force enemy forces into a kill sack and use mass fires to increase the likelihood of destroying targets. The more bullets fired at a point, the better the chances of a hit. This meant that the area beyond his focus would have to be addressed by artillery, air support, or other means. Likewise each artillery piece would wait until forward observers spotted enemy forces on one targeted area so they all could fire together and increase the probability of hitting targets. Battlespace has been a slave of weapon precision.

Guided tactical munitions will emancipate our use of the battlespace. Smart projectiles will enable tanks and artillery to fire in the direction of an enemy and allow the round to spot its own target. These systems will eventually achieve an expected performance level of one kill per round. Target areas will no longer depend on terrain; they will encompass the entire battlespace. Accurate fire-and-forget systems such as the anti-tank Javelin will enable commanders to deploy skirmishers far beyond the main line of defense, thus increasing their coverage of terrain. Former delineations of area responsibilities by weapon systems will become indistinguishable.

Guided munitions will bring other players to the tactical battlefield. Because of difficulties in coordinating accurate application near friendly troops, only the far reaches of battlefields have experienced many powerful long-range systems. This will change as new, highly accurate cruise missiles begin to support commanders. Someday a Ranger unit pinned down by a machine gun from a nearby highrise may call upon support from a GPS-guided tactical cruise missile launched from a ship. Elsewhere, a corps may fire missiles at strategic objectives which other services or the National Command Authorities (NCA) want destroyed. As the military learns to do more with less, interservice support will be common on lower levels of command.

When the Navy and Air Force adopted guided missiles they learned to incorporate defenses against such weapons. Systems such as rapid blooming on board chaff and anti-missile electronic jamming equipment are present on all Navy ships. In the future special vehicles will carry such devices to protect against enemy missiles. Armor, infantry, air defense artillery, and the Signal Corps will compete for the control of such systems.

A second radical change in perceptions of battlespace results from robotic reconnaissance. As units apply combat power at greater ranges, they must see at greater ranges. In many cases these distances exceed the supportable limits of scouts. Already unmanned aerial vehicles (UAVs) can provide reconnaissance imagery down to units in the field. Digital links will provide real time pictures from airborne platforms such as Navy UAVs and Army and Air Force joint surveillance target attack radar system (JSTARS) capabilities to ground headquarters as they maneuver against an enemy. Soldiers will one day carry small screens displaying symbolic representations beamed from satellites showing what lies over the horizon. Accurate intelligence pictures that higher headquarters could once only dream of will be available to front line troops.

New Possibilities

Technology has also altered combat by increasing potential rates of movement. Vehicles like M–1 Abrams tanks are fully 33 percent faster than their predecessors. The effect on maneuver is obvious, yet the effect on command and control is perhaps more subtle but decisive. General Schwarzkopf's maneuver known as the "Hail Mary" displayed the unprecedented ability of large forces to displace over great distances at speeds that outpaced the enemy's ability to react. Field headquarters must not only plan and conduct these rapid operations but also physically move with them. Modern rates of speed can have a similar concrete impact on other operations. Since C–17s fly as much as 50 percent faster than C–130s, planners must ensure that cargo does not pile up at airheads. Greater speeds allow wider maneuvers that, in turn, require more bulk fuel. Increased speed of action intensifies the planning and coordination burden carried by staffs.

Traditional ideas for employing forces give way to new possibilities introduced by technical advancements. The V–22 Osprey and similar aircraft may make it routine for infantry companies to move five hundred miles per day. Remotely piloted aircraft firing guided munitions may be their primary source for reconnaissance and fire support at such ranges. Headquarters for such units will need specialized abilities to command and control these operations.

Enhancements in command and control are already upon us. Digital and computerized communication systems now exist but only as a preview of what lies ahead. Voice encryption is evolving into burst transmissions of pre-formatted reports. Computers on vehicles will allow crew members to key in or select from menus items that software will incorporate into report formats and send at a touch of a button to headquarters. Future versions will allow headquarters to extract information from sensors on the vehicle without bothering crew members with extraneous reports. Position location devices on supply trucks, for example, will routinely report to a headquarters where a computer screen display will enable commanders to see where their assets are at any given time. Adapting existing technology will allow trucks to carry digital maps that can help drivers see their location, select routes in unfamiliar areas, and keep track of units around them. Beyond that drivers will be able to update screens by noting obstacles, report enemy positions, or even depict the delivery of supplies and transmit that information via computer net to other screens. One day such systems will have voice synthesizers that verbally draw attention to informational changes so that drivers need not constantly watch screens. Combat and peacekeeping units will wonder how they ever got along without such systems for maintaining common situational awareness.

emerging technologies are driving doctrinal changes in battlefield time-space relationships

Digital communications will change many aspects of military operations. Because they will augment rather than completely replace radio systems, technical and logistical support to field units will necessarily increase. Most importantly the information flow between communication nodes will become a torrent in all directions, placing greater strain on decisionmakers. Consider that there currently exist technologies by which medics at accident sites can hook up by TV to experienced doctors at hospitals to receive guidance and prepare hospitals for incoming casualties. The medics can pass vital signs digitally to emergency rooms, saving critical time. Imagine that type of system with SEAL teams on patrol, F/A–18 cockpits on a bombing run, or fire support teams at outposts, talking directly to headquarters as NCA monitors from around the world. Picture the sheer volume of information pouring into a brigade headquarters from above and below as automated digital reports arrive at light speed. It is easy to envision brigade commanders having to fight the urge to bypass less experienced battalion and company commanders to guide platoon leaders at objectives via direct digital links. The increasing volume and velocity of information raises the need for more understanding on the part of receivers. For decisionmakers to understand the variety of incoming data, they must have people with specialized knowledge available to translate that data into usable information. This requires innovation in the way we operate.

Time, Space, and the Battlefield

Emerging technologies are driving doctrinal changes in battlefield time-space relationships, the balance between combat power and manpower, and the nature of command and control. Yet perhaps the greatest change is occurring in our concepts of time-space relationships on the battlefield. We have built our warfighting structure on doctrine composed of tactical, operational, and strategic layers. Recent publications such as the universal joint task list define war on three levels: strategic, national security objectives; operational, campaigns and major operations; and tactical, battles and engagements. These levels evolved over centuries and involved large armies with limited weapon ranges and ponderous rates of movement. Advancements today have cracked such doctrines.

U.S. Navy (Wayne W. Edwards)

Tomahawk being launched from *USS Laboon*.

Modern range, speed, and method render older notions of battlefield spatial responsibilities no longer meaningful. A Marine expeditionary unit is only a tactical level unit of battalion size; yet we can introduce it on foreign shores to secure an embassy on what is essentially a strategic level operation. In recent joint exercises we have deployed tactical level single airborne battalions and small groups of attack helicopters on operational level deep attacks. Future commanders in ground fights on the tactical level will have the ability to receive fire support from new Navy arsenal ships firing operational level munitions such as cruise missiles.

Drawing tactical-strategic distinctions from tired ideas about maneuvering within or beyond weapon ranges is no longer practical. The doctrinal battlespace responsibilities allotted to different levels of command are based on the ability to see and affect an enemy. In large measure they result from an outdated concept of strategy and tactics. FM 100-5, *Operations*, defines strategy as, "The art and science of employing the Armed Forces and other elements of national power during peace, conflict, and war to secure national objectives." It also defines tactics as, "The art and science of employing means to win battles and engagements." The difference between the two is largely in the scale of operations. One can see how in war strategy can beget tactics—that is, national authorities position forces that fight the battles. To fill the gap between them we adopted a convoluted idea of operational art contained in FM 100-5: "The employment of military forces to attain strategic goals, through the design, organization, integration, and execution of battles and engagements into major campaigns and major operations. In war operational art determines when, where, and for what purpose major forces will fight over time."

To understand these concepts requires research into their origins. Having done that, let's cut straight to the chase. In his seminal 1835 manual, *Infantry Tactics*, General Winfield Scott opened these definitions from von Bulow:

I call strategy the hostile movements of two armies made beyond the view of each other; or—if it be preferred—beyond the effect of cannon. Tactics I call the science of movements which are made in the presence of the enemy, that is, within his view and within the reach of his artillery.

The contemporary division of doctrine into three levels of war, with its appropriate segregation of responsibilities, is a logical extension of Scott's ideas.

We can start to create a new foundation by understanding that strategy and tactics exist on all levels of war. Strategy is the positioning of combat power to influence the will of a competitor. Tactics is the application of fire power to defeat enemy force. A company commander employs strategy by sending a platoon around an enemy's flank. A coalition commander applies tactics by destroying airfields with cruise missiles. Regardless of the level of combat, the principles are the same. The attempt to categorize units as levels on the battlefield prevents developing interoperable organizations. The Marine expeditionary unit can never be organized to conduct a

national mission if the unit is not considered to be on the proper level even though future technology may give it the tools and reduced force levels may give it the mission.

Adjusting organization to technology must begin with compensating for tempo. Just as we learn from physics, time as defined in terms of rate of movement and distance grows smaller as rate increases. We have seen that technology has expanded the rate of battlefield events, decreased the resultant time, and accelerated the potential tempo of operations. The speed of decisionmaking is fairly constant though dependent on information. If there is less time we tend to make fewer good decisions and more hasty ones. We can compensate by anticipating events. In effect we think at greater distances to compensate for the pace of events. The increased range in weaponry, reconnaissance, and communication have enabled us to keep this balance so far. It is only a matter of time until we surmount the limits of small unit commanders to effectively command and control the space over which they make decisions. Only refinement in organization can ensure that decisionmaking keeps pace with the tempo of operations.

More with Less

It is commonly claimed that the Armed Forces are required to do more with less. That is not good if you are a commander with less. Force reductions have altered the routine at the National Training Center where brigades now routinely bring two battalions rather than three. In joint task force exercises we commonly have battalion-sized elements conducting forcible entry operations which doctrine says they are not large enough to do on their own. In these exercises it is normal for marines to experience a lack of air cover at times because we train with one carrier wing instead of two and it requires flight deck down time. Reduction in strengths and budgets causes alterations in training, forcing small units to take on larger missions. While our stated goal is always to train as we fight, we must face the more likely reality that we must fight as we train.

sources of joint combat power are collocated at the highest levels of command

Technology has always enabled units to do more with less. The number of men required per mile of a line dropped dramatically when rifles replaced smooth bore muskets. The number of aircraft required to destroy a target fell when missiles and later smart munitions replaced bombs. What once was the task of lines of battleships is now accomplished by one aircraft carrier. In each case the new unit needed fewer men, aircraft, or ships because it had control of rifles, missiles, or planes. Missions formerly reserved for divisions will be accomplished by smaller units if those units can control the sources of modern combat power.

As technical advances increase the ratio of firepower per man, the capability to apply that firepower effectively must stay abreast. Increased communications will enable the command and control required to manage the sources of combat power. When it becomes necessary to conduct forcible entry operations with battalion-sized units, the troops can coordinate combat power from multiple sources provided that they know where to look and what they need. Imagine an airborne battalion seizing a vital location as an Aegis cruiser provides air defense, Air Force JSTARS relays information on nearby troop movements to the commander on the ground, and an airborne joint targeting cell coordinates long range air and missile fire support to isolate the area of operations. Forcible entry with smaller units is possible provided unit commanders have joint combat power support at their fingertips.

Today the sources of joint combat power are collocated at the highest levels of command. Marine battalions cannot conduct forcible entry operations without adequate combat power. In a typical scenario, a battalion commander ashore needs to coordinate pre-planned air support through the staff of an amphibious task force afloat in the amphibious readiness group. They in turn pass the request through the joint force air component commander, usually located with the staff of the JTF commander aboard another ship. They would apportion support through an air tasking order some 72 hours in advance. The order is then sent to the carrier battle group whose air wing would fly the mission. Future communications may make it easier to coordinate such support, but the chain of control must change to facilitate the battalion commander at the front.

Futurists Hiedi and Alvin Toffler note that the "de-massification" of production systems is a trademark of effective third wave societies. As we embrace technologies we must also adapt to use them. One of the most important military adaptations will be the de-massification of the production of combat power. Smaller units must be able to use modern means to produce more combat power by applying joint sources. This translates into the need to reconstruct command organizations to provide the small unit commander with the expertise to use this combat power and still not suffer paralysis from information overflow.

New command and control organizations can provide maximum battlefield effectiveness by

U.S. Air Force (E.H. Littlejohn)

C–17 Globemaster III.

integrating new technology. Current structures are not well suited to efficiently utilize the firepower, maneuver speed, and communication abilities of the future battlefield. Army brigade headquarters, for example, are stretched to their limits by the high tempo environment of the National Training Center where commanders and staffs are overburdened. They must simultaneously fight deep with few reconnaissance assets, coordinate maneuver battalions, integrate sources of fire support, and oversee a range of logistics. The brigade command structure manages more diverse decisions with fewer people than other levels of command. Yet technological advances and manpower decreases will make such units the type deployed to accomplish future independent missions. The dilemma of new technologies is that they push combat potential beyond decisionmaking abilities.

The solution to this dilemma lies in organization. We must "de-massify" the production of combat power while decentralizing decisionmaking. Added levels of command and control with specified responsibilities and specialized functions will enable the combat brain to keep pace with the growing strength of the combat body. An examination of a possible command and control structure for an Army brigade provides an example of incorporating new technologies and doctrine to fully realize the promise of RMA.

Redistributing Responsibilities

To ease the burden of decisionmaking on brigades it must be reorganized. This is not new: in Europe during World War II, the Army scrapped brigades in favor of combined arms formations known as combat commands. As the flow of battlefield information increases and combat power becomes more specialized, we must equitably redistribute responsibilities. Adding a headquarters to the chain of command would increase flexibility and responsiveness. Returning regiments to the chain, for example, would free brigades from coordinating maneuver battalions and allow them

to concentrate on applying combat power from multiple joint sources. Planning two levels down in accordance with doctrine, brigade headquarters would position battalions against enemy forces while regiments applied the combat power of companies. Brigades would predominantly conduct battlefield strategy while regiments would focus on battlefield tactics.

Under this organization brigade headquarters becomes the focal point for reconnaissance. As technology brings satellite and airborne intelligence to the brigade, increased staff specialization will be needed to translate data into usable information. This intelligence will drive the direction of ground reconnaissance assets. If JSTARS reports a mass of vehicles moving on an unexpected avenue of advance, a brigade commander will want observers to cover that route. This necessitates collecting scout platoons from battalions to form a scout company brigade control. Such a unit will also have platoons for UAVs and robotic reconnaissance assets which illustrates "de-massification" at battalion level and creation of specialized units. Adding fire-and-forget anti-tank missiles will allow battalions to adopt skirmish units to conduct missions normally done by scout platoons.

Brigade staffs will require greater specialization. Force XXI concepts rely on modules of units from which to quickly tailor forces to suit a mission. Staffs can do the same. If an airborne brigade were jumping to seize an airfield near a coast and then conducting operations with a Marine expeditionary unit assaulting from the sea, that brigade staff should receive augmentation to enable command and control. Imagine augmentation staff liaison modules assigned to division that are chopped to brigade for such missions. These would include Air Force liaisons, air and naval gunfire liaisons, theater ballistic missile defense representatives to coordinate with offshore Aegis missile cruisers, liaisons for national intelligence assets, and other specialists as required. Divisions would maintain working relationships between such specialists and brigade staffs in garrison training. Once deployed, digital communications would link liaisons to nodes of expertise and authority supporting brigade. Similar organizations would conduct tailored logistical support. The deployed regimental commander maneuvers battalions as brigade integrates combat power support. Until larger forces arrive on the scene, a brigade commander could act as a joint force land component commander.

Decisions are effectively distributed among a larger number of skilled people increasing the overall speed of action. The increased tempo from this reorganization has a hidden benefit. Being faster than an enemy in any phase provides an edge in decisionmaking. Making faster decisions, the true aim of increased information, enables us to act faster than an enemy and decreases its ability to influence our operations. Force protection is thereby enhanced.

A digitally smart, joint, and deployable organizational structure and doctrinal innovations are only some examples of fully realizing the revolutionary potential of technologies. Changes are underway in how we shoot, move, and communicate. Resultant changes in relationships between battlefield time and space, combat power, and manpower, and command and control have not been completely appreciated. To capture the potential of technology we must establish a better doctrinal basis in areas such as strategy and tactics and then organize to fight accordingly. Redefined levels of battlefield headquarters will increase the information flow and maintain cohesive direction while enhancing freedom of action. In an era of smaller forces, we must enable commanders to draw on joint resources to compensate for a loss of manpower. By de-massifying the production of combat power and decentralizing command and control we can increase specialization and the speed of the decision cycle and force protection through action. Force reductions will impose large missions on small units and technology will give such units the potential to accomplish missions. Only changes in doctrine and organization will give them the ability to succeed. JFQ

This article is an edited and abridged version of an entry in the 1996 *JFQ* "Essay Contest on the Revolution in Military Affairs" that was recommended for publication by the judges.

U.S. Army

General Tzu's Army:

OPFOR of the Future

By MICHAEL R. LWIN

Captain Michael R. Lwin, USA, an infantry officer with OPFOR experience at the National Training Center, is a student in the SO/LIC program at the Naval Postgraduate School.

Great expectations surround the revolution in military affairs (RMA). The Chairman has stated that taking advantage of it means providing "America with the capability to dominate an opponent across the range of military operations." Although we may seek to acquire such dominance potential enemies will also be busy. How might an opposing force (OPFOR) attempt to defeat the Armed Forces of the 21st century? This article provides a scenario for examining the strategies of future OPFOR and concludes by analyzing enemy strategy in relation to maneuver warfare theory and looking at its implications for future defense planning.[1]

Setting the Scene

For the commanding general of the American division, the battle had not really begun. His mobile strike force had been deployed to a far away theater to deter an aggressor from the

north, or to fight and repel it if necessary.[2] Despite a few teams of OPFOR reconnaissance soldiers crossing the border, hostile mechanized forces were still posturing on their territory. To provide maximum time to pursue deterrence and diplomacy, U.S. forces could not begin combat operations until a credible offensive threat (for instance tanks) crossed the border.

The commander reviewed his intelligence and options with Battle Staff Bravo. Indeed, the enemy appeared to be operating pretty much as its doctrine indicated. Although thick cloud cover prevented real-time visual and infrared downlink from satellites, the feed from the joint surveillance and target attack radar system (JSTARS) II showed a long procession of armored fighting vehicles moving out from their assembly areas. Despite attempts by the enemy to destroy or deceive them, the division's long range unmanned aerial vehicles had already spotted most of the OPFOR tanks. The video images of moving tanks on display two of his multifunctional command display told the commander exactly what he thought he needed to know.

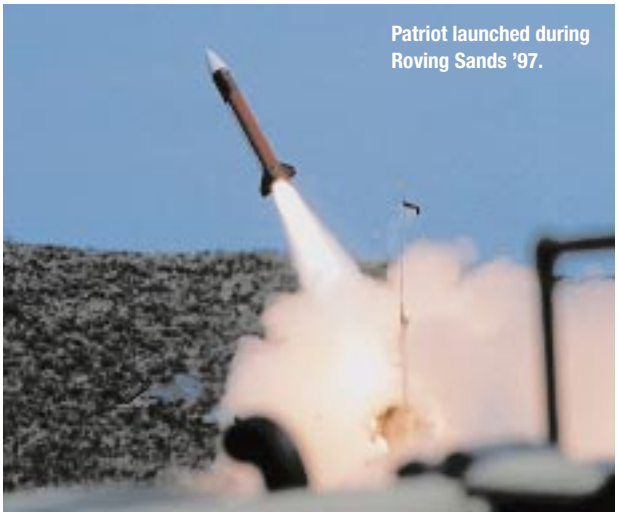
The general reviewed the concept with his staff. The wide valley corridor which canalized the approaching enemy division would soon become a virtual valley of death. The division cavalry squadron would delay lead OPFOR elements long enough to set them up for the kill. At H-hour, an attack helicopter battalion would hit from the west to destroy the second regiment. A rocket strike with precision guided submunitions would attrit another. At H+2, the ground brigade with two armored task forces would launch a flank attack from the east to complete the destruction of OPFOR mechanized forces.

What Tzu Knew

The OPFOR army, under General Tzu, had the mission of defeating our forces to end U.S. involvement on the peninsula, allowing follow-on forces to subdue overrun territory. The general wanted to give Americans everything they expected and more. From his study of the recent war in southwest Asia, he knew U.S. capabilities provided a near perfect view of the entire battlefield—or at least its mounted battlespace. Tanks and artillery could not hide. With those facts in mind, Tzu had spent years preparing for this battle.

In the past, the doctrine of Tzu's nation had stressed that dismounted infantry forces were primarily used to defend the rugged terrain of the homeland while mechanized forces would slice into enemy territory. Secretly, Tzu had turned this doctrine on its head. Two divisions of infantry had undergone training deep in the homeland to learn the art of infiltration, raids, and ambushes.

Tzu's plan was simple: create enough casualties to crush American will to keep their forces in the theater. Unknown to his opponents, Tzu had already committed two light infantry divisions across the border. Although the enemy had captured a few squads and platoons, Tzu knew that the Americans would not consider them more than reconnaissance elements for a mechanized force that he was massing across the border. Tzu's tanks and artillery would draw American attention.



Patriot launched during Roving Sands '97.

1st Combat Camera Squadron (James D. Mossman)

In the three days since his soldiers had infiltrated Tzu had no contact with them. He knew that to communicate would expose their position. His mission-type orders were simple and did not require constant control. On Tzu's side of the border, however, radio traffic maintained a steady crescendo. Although his mechanized forces used some cursory encryption and frequency-hopping measures, he wanted it clearly known that he was preparing to attack. Other deception measures portrayed an entire mechanized corps ready to move.[3]

As lead OPFOR tanks began crossing the border, the U.S. commander received warning of an incoming ballistic missile attack. He was certain of the protection of his air defense umbrella. Five years ago an enemy in another theater of war used similar archaic modified Scud missiles in futile efforts to strike our forces. Unlike Desert Storm there was no debate about the effectiveness of the missile defense; not a single warhead detonated on, over, or near any American soldier.

The division air defense officer was surprised when a incoming missile did not begin to arc

down into the air defense coverage sector. His first impression that his display was incorrect was erased as he saw the missile detonate in the stratosphere above the division sector. OPFOR had launched the first of many low-yield nuclear weapons to generate an electromagnetic pulse (EMP) to jam or degrade C4I systems.

The day started well for Comanche 34, a pilot in the attack helicopter battalion. Looking at the display in his cockpit before take off, he saw a computer generated map depicting every enemy air defense radar and missile system in his area of operations. Significantly, the digital download into his system revealed that each one was destroyed, jammed, or forced off the air. From his experience in the second Gulf War, he knew that any radar which was turned on would receive an unhealthy dose of 155-mm or multiple-launch rockets. A few hours later reality shattered his faith. Hovering on the reverse slope of a wooded ridge to provide cover to a search and rescue mission, he struggled to understand why their losses were so high. A few years earlier in the Great Desert War not a single aircraft was lost to the enemy. Now his battalion's main task had switched from attack to protecting search and rescue efforts for downed air crews.

his battalion's main task had switched from attack to protecting search and rescue efforts

General Tzu had adopted a decidedly low tech air defense concept. His plan called for 40 dismounted platoons, each with a man-portable missile system, heavy machine gun, and blinding laser system to screen likely air avenues of approach. Acquisition was by sight or sound. Later analysis would show that of 120 missiles fired only three found their mark. Three other aircraft were shot down by machine gun fire, and two crashed after their crews were blinded by lasers. Many other aircraft were damaged. Unfortunately the U.S. commander's high resolution computer wargaming model totally discounted this mix of "obsolete" and high tech weapon systems.

The Digital Link Was Down

Abrams tanks could count on kills at 3,500 meters and kills in excess of 4,000 meters were not uncommon. But the local terrain limited most shots to 2,000–2,500 meters. And here enemy tanks were not the major threat. As Captain Johnson and the lead company team approached the defile before their main objective, a barrage of anti-tank missiles literally fell on them. After losing three tanks, Johnson ordered a halt and dismounted his infantry. Thirty-four men with the world's most advanced infantry equipment moved out to clear the ridges on either side of the defile.

The OPFOR infantry battalion commander facing Johnson was satisfied. The Americans had been halted without any losses to his troops, who were armed with advanced anti-tank missiles fired from cover and guided to the target via fiber-optics. The OPFOR colonel noticed the platoon moving forward and, having inspected every fighting position, knew his men were ready.[4]

Lieutenant Smith, carrying a thirty-pound radio/digital control pack on his back and leading the platoon, began climbing the ridge. As his lead squad took fire, he knew what was happening as a small arms fire locator automatically sent a report back to him via digital link. In turn, Smith used the information to digitally request artillery fires. By then the platoon leader and his first two squads were in dense woods. Next a mortar barrage fell on the trail squad still in the open. Smith quickly ordered them into the woodline and began executing a maneuver to flank the enemy.

As they moved, Smith wondered where his artillery fires were. For some reason the digital link was down. Whether it was EMP from the nuclear skyburst overhead, the mountains masking the communication links, or simple equipment failure, he would never know. He received a frantic report: the flanking squads had run into a minefield. Now he really needed artillery. Fumbling for a map, Smith estimated his position and that of the target and called for immediate suppression fires by voice over the radio.

The colonel observed the Americans below. He expected to lose his forward line of fighting positions. American sensors and small arms were too powerful. But he knew that the difficulty of fighting through an entrenched enemy, climbing a steep slope, and breaching the minefield would exhaust and ultimately stop the heavily-laden Americans. This gave him time to adjust his mortars the old-fashioned way. Then the artillery and mortars came into play. The mortars fell on the Americans, American counterbattery fires destroyed the OPFOR mortars, and a barrage of American improved conventional munitions fell on everyone. The grid location Smith had called in was incorrect—he was dead, the platoon was depleted to combat ineffectiveness, and tankers would have to wait for more infantry to clear the ridge.

Specialist Jones drove her high mobility resupply truck in support of the ground attack. Trailing the combat battalions in a convoy of ten trucks, she was apprehensive but felt relatively secure with two battalions of tanks and Bradleys clearing the road. But as she rounded a corner, the sound of gunfire told her they might not

Joint Combat Camera Center (Aaron N. Bauldree)

UH–60s landing in central Thailand.

have finished the job. Three battalions of OPFOR infantry had infiltrated to positions astride the main supply routes. Tzu's template and instructions were well rewarded. The OPFOR company commander initiated an assault with ten enemy trucks in the kill zone. Targeting antitank missiles on security vehicles, he had stripped the Americans of the capability to respond in under thirty seconds. Well-placed machine gun fire brought the trucks to a halt. As he blew his whistle, his company assaulted into the kill zone.

The division public affairs officer was in a HMMWV behind Specialist Jones. Her mission was to escort the media forward to record the American victory. As the firing started, her driver was wounded and veered off the road. The firing slacked, and the enemy began to assault through the decimated convoy. Without any means to resist, she chose to surrender. As she got out of the vehicle, arms raised, an OPFOR soldier shot her dead where she stood.

maneuver warfare theory holds that one method to defeat an enemy is through dislocation

The enemy infantryman next turned to the TV crew sitting in the back of the HMMWV. As he was about to squeeze the trigger, the OPFOR commander knocked the weapon out of his hands. "Fool," he shouted, "move out and clear the truck over there!" The soldier, not understanding his almost fatal mistake, ran off to execute the new order. The OPFOR commander, however, knew the value of the media. Because of his actions the scenes of exploding supply trucks and fuelers and dead American soldiers, men and women, were broadcast on television in the United States two hours later. The commander later received his country's second highest award for this act.

The outcome of this hypothetical battle is left to the reader's imagination. It is presented to illustrate potential vulnerabilities in the digital force and possible enemy actions to exploit them.

Functional Dislocation

Maneuver warfare theory holds that one method to defeat an enemy is through dislocation, "the art of rendering the enemy's strength irrelevant."[5] Dislocation itself comes in different forms: temporal, positional, functional, and moral.[6] Surprise is key to each; without it an enemy can react to avoid dislocation. In this scenario the OPFOR commander uses all four types of dislocation to fight the Americans.

The fictional enemy has the initiative because of American emphasis on pursuing diplomatic initiatives to the end and a reluctance to use preemptive strategies. With the initiative, General Tzu renders U.S. forces temporally irrelevant by infiltrating main attack forces early. His troops gain surprise through stealth and American failure to recognize them as the main attack.

Marines landing at Kauai, Rimpac '96.

U.S. Navy (Jeffrey S. Viano)

By introducing only dismounted forces across the border Tzu postpones the outbreak of hostilities and gains time to infiltrate farther into our territory. By the time combat commences, the enemy virus is already deep in our system.

Tzu achieves positional dislocation by the nature of his forces. Using armored elements to attract attention and engage from the front, his infantry maneuvers deep on the battlefield to strike relatively soft targets in mechanized units: logistical centers, command posts, and communication nodes. Tzu's force uses weapons that bypass tanks and armored vehicles by venturing into terrain where vehicles cannot go—infantrymen.[7]

Functional dislocation is achieved by making our forces work improperly. This is done with both low- and high-tech weapons. A recent example was the Army's experience in Somalia. The use of low-tech rocket propelled grenades, an unguided, man-portable weapon designed to kill tanks, allowed poorly trained Somalis to shoot down dislocated special operations helicopters.[8]

In the foregoing fictional battle, General Tzu directly and indirectly functionally dislocates our forces. By launching multiple EMP weapons, he degrades our sensors, computers, and digital links and plays on our dependence on these systems. The young American officer, dependent on the global positioning system and digital links, loses his ability to navigate by map and compass and to call in fires by voice.

The use of nuclear weapons in a non-casualty producing role further dislocates our forces. The deterrent effect of the U.S. nuclear arsenal has failed; Tzu gambles that America will not use a weapon of mass destruction to retaliate for a weapon that has not directly killed a single soldier or civilian. Is there another form of deterrence that could prevent this type of nuclear attack? What is the response to the use of nuclear weapons as EMP generators rather than mass destruction?

Indirectly, Tzu dislocates opposing troops by attacking with forces and weapons that they are not fully prepared to fight. JSTARS and unmanned aerial vehicles may see tanks miles away, but how far off can they see soldiers walking under triple

canopy jungle? Tzu's use of a purely man-portable air defense concept is unpredicted by the staff and its computers. He also uses blinding laser and mine weapons assumed banned by international convention. Finally, he uses an infantry heavy force in close terrain, a situation in which the mobile strike force is not optimized to fight.

The question today is whether we are functionally dislocating ourselves in designing future forces. Force XXI technologies appear to add tremendous capability to fight a mounted enemy in open terrain like that at the National Training Center or in Kuwait and Iraq. But what is being done to counter dismounted soldiers in close terrain, the type of enemy who confounded U.S. forces in the hills of Korea and the rain forests of southeast Asia?

Moreover some observers think future enemies will choose forces that inherently dislocate us.[9] Guerrillas, insurgents, and terrorists use a different form of combat, one which the so-called RMA and Force XXI have very little to say about. As we gain dominant capabilities in one type of battlespace, it only makes sense for an enemy to choose an alternative battlespace.

The last form of dislocation is moral, breaking enemy will to continue the fight. Whether because of a failure to create and sustain national will, an increasingly strong reluctance to risking American lives for any but our most vital interests, or the faster transmission of news and images, the United States appears to be highly vulnerable to moral dislocation. We have set the conditions for wars to be short and have few casualties. Vietnam, Somalia, Haiti, and Bosnia bear this out.[10] And Saddam's strategy in the Gulf indicates that these lessons were not lost on others.[11]

The future holds variables that will exercise an undetermined effect on our will. We have near instantaneous media coverage already. As this trend approaches its limits and news permeates every corner of the Nation, how will the public react in a crisis? Will information warfare involve an enemy that puts harrowing images on our TV screens? The integration of women into all areas of the military adds another variable. What will be the public reaction when both men and women suffer mass casualties on some far away battlefield? If the images relayed from Somalia in October 1993 had included dead American female soldiers would it have made any difference?

Many questions raised in this article indicate that there is still an area of uncertainty about the future despite the promise of RMA. In dislocation, there are variables that could put dominance at risk. A perceptive enemy will take advantage of them. Friction and the fog of war will provide ample opportunities to do so. Maintaining a lead in technology will not ensure dominance. Under some conditions it may be achievable without the latest computers, communications, and weapons. Like General Tzu, we will have to find the proper mix of organization, doctrine, and technology. Only with a thorough understanding of the enemy, well configured and trained forces, and unified action can the Armed Forces be dominant over OPFOR of the future. JFQ

NOTES

[1] This hypothetical scenario abstracts the use of naval, air, and allied forces. Moreover, OPFOR organizations and characteristics are not meant to represent the future forces of a particular nation. The author would like to thank Paul Stockton of the Naval Postgraduate School for help in bringing this article to fruition and Chris Layne and John Arquilla for their comments.

[2] For the latest information, see *Prairie Warrior '96* (on-line at the U.S. Army Command and General Staff College web site).

[3] For deception tactics against an experimental digital force, see Richard A. Jodoin, "Opposing Force Deception Operations during Rotation 94–07," *Red Thrust Star* (January 1995), pp. 11–14. (*Red Thrust Star* is the Army OPFOR magazine at the National Training Center.)

[4] This passage owes its inspiration to John A. English and Bruce I. Gudmundsson, *On Infantry*, revised edition (Westport, Conn.: Praeger, 1994), pp. 176–77. Chapter 10 contains insights on the importance of infantry on the future battlefield.

[5] Robert R. Leonhard, *The Art of Maneuver* (Novato, Calif.: Presidio, 1991), p. 66.

[6] The subdivisions and definitions of dislocation are from Robert R. Leonhard, "Force XXI and the Theory of Winning Outnumbered," *Army*, vol. 46, no. 6 (June 1996), pp. 60–62.

[7] For a similar scenario and details on this form of maneuver see Charles S. DeVore, "Countering U.S. Heavy Forces in Rough Terrain," *Red Thrust Star* (July 1991), pp. 10–14.

[8] See Rick Atkinson, "Night of a Thousand Casualties," *The Washington Post*, January 31, 1994, pp. A10–11. During the October 3, 1993 raid in Mogadishu, two MH–60 helicopters were shot down and two were seriously damaged by rocker propelled grenades.

[9] For commentary on irregular warfare see Martin van Crevald, *The Transformation of War* (New York: The Free Press, 1991).

[10] See Harvey M. Sapolsky and Jeremy Shapiro, "Casualties, Technology, and America's Future Wars," *Parameters*, vol. 26, no. 2 (Summer 1996), pp. 119–27.

[11] Lawrence Freedman and Efraim Karsh, "How Kuwait Was Won," *International Security,* vol. 16, no.2 (Fall 1991), p. 15.

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Interservice Competition:

Air Force F–16.

U.S. Air Force (Shonna Ridings)

The Solution, Not the Problem

By HARVEY M. SAPOLSKY

We do not know what the future holds. Although our Nation is vastly stronger today than at any time in the past, we are likely to face major challenges. But we do not know how or when. To deter such challenges and respond effectively if aggression does occur, the Armed Forces need a policy planning system to identify and correct weaknesses in our security as they develop.

Intuitively we know the sort of planning to do. Americans prefer a free market system to controlled markets, competition to monopoly. We believe in competitive elections rather than one-party rule. And when an international security crisis befalls us, we never have the will to suppress competitive urges among the services—the same urges usually labelled wasteful duplication when the threat is not so obvious. Recall that

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three commands fought independently and successfully in the Pacific during World War II. And because three services developed ballistic missiles, we were able to meet the Soviet challenge of the 1950s rapidly and effectively.

Interservice competition offers civilians several major advantages. First, it helps generate vital information. What the Navy won't tell us about its vulnerabilities, the Army and Air Force might. Are aircraft carriers easy to attack? Should an upgraded Aegis system form the heart of our theater ballistic missile defense? Can naval forces stationed off a coast exert significant influence in an evolving crisis? Ask the Navy; but ask the Army and Air Force as well.

Second, it gives civilians leverage in their effort to control defense policy. It is extremely difficult to face down a unified military. Ranks of generals and admirals who are in agreement on the same issue position are a formidable force to outmaneuver in any Washington policy debate. Interservice competition gives civilians the possibility of informed and powerful military allies in defense strategy and budget discussions. It allows them to play one service against another when particular policies are preferred. If the Army begins to complain about peace operations which the Clinton administration appears to favor, perhaps the Marine Corps will sign up to conduct them.

the problem is that competitors prefer to work together

Third, competition spurs innovation. When there is expectation of significant reward or loss, the services may offer up not only information about their bureaucratic rivals but new ideas, ways of both improving their military capabilities and protecting their roles and missions. It was the Navy's fear of losing the nuclear deterrent mission entirely to the Air Force in the 1950s that gave us the Polaris submarine that in turn reduced the need to deploy hundreds of vulnerable and costly strategic bombers and most of the liquid fueled missiles that the Air Force was developing.

The benefits of competition are not always grasped. As one recent analysis of innovation theories points out, the Navy chose not to challenge Air Force plans to field either new bombers or highly accurate—but difficult to base—MX ballistic missiles in the early 1980s even though it was developing an equally capable missile system for its submarine force. Similarly, the Marine Corps decided after a brief fight not to oppose Army plans for prepositioned ships laden with equipment for mid-level contingencies even though this fleet largely duplicates capabilities the Marines already have and intend to expand. Billions could have been saved in each instance if the public had been made aware of the overlap and advantages of one alternative over the other.

The problem, of course, is that competitors don't like to compete. They prefer to collude, to work together for mutual benefit. Antitrust laws only protect us from collusion among business firms to the extent they are enforced. There is, however, no similar shield against collusion among nonprofit organizations and government agencies. "Give the United Way" really means "Give the Charity Cartel Way" as charities collude to prevent performance comparisons and any expression of donor choice. The Armed Forces, which became sensitive to being manipulated at the hands of Secretary of Defense Robert McNamara, have now become the champion of jointness, their shield against being played off against one another by civilians. Joint approval means all the tradeoffs are made on the friendliest possible terms under which each service threatens retaliation if its most important needs are not considered.

But the Armed Forces may overestimate the willingness of civilians to foment competition. Interservice friction produces a lot of political heat because it usually involves appeals to Congress and recruitment of partisan supporters among military retirees, contractors, and friendly reporters. The resulting turmoil often reflects badly on civilian officials, leaving a public impression that they fail to manage effectively. This is particularly true when accusations are made over the duplication of capabilities, which adds to the general perception of waste in government; but it also extends to criticism by one service of another. Too many inside and outside of government confuse audible debate over policy alternatives with indecisiveness when it should be seen as the necessary prelude to informed political judgment.

Our four air forces, three armies, two strategic missile forces, and one and a half navies are indeed wasteful luxuries if they are not harnessed to generate policy options and comparisons. In an uncertain world it is better to have multiple perspectives on defense issues, but how can this be achieved short of a major crisis? Congress was once thought to be the champion of the competitive approach but instead enacted the Goldwater-Nichols reforms, the 1986 blueprint for jointness now so warmly endorsed by defense officials and senior officers as their shield against public scrutiny. Apparently, the potential for serious oversight that a competitive structure might require was too exhausting for Congress to contemplate, absorbed as most members have become by ideology and the quest for reelection, and it sought to stamp it out. How then can a competitive defense system be maintained?

Marine AV–8B.

2d Marine Division, Combat Camera (B.E. Van Cise)

U.S. Navy (Stephen Batiz)

Navy F–14.

Fiscal austerity fortunately works in favor of increased competition. The social entitlement battle in the face of the deficit reduction effort is bound to draw attention to the fact that defense expenditures in real terms have yet to fall below their Cold War lows despite the fact that neither the Soviet Union nor the Warsaw Pact still exist. Collusion functions best when hard choices can be evaded. Logrolling will stop when one of the services discovers that its vital interests are being jeopardized by the need for further reductions.

the services offer the conditions crucial for effective competition—"constrained autonomy"

Luckily, the services have not entirely lost their identities although some promoters of jointness wish they had. Relatively simple and inexpensive features such as separate academies, distinctive uniforms, and unique military traditions maintain public support for the Armed Forces. More important, each has a service staff, an affiliated civilian secretariat within its department, and continuing attachments to particular weapons that provide a power base from which to develop and promote alternatives.

The services potentially offer us the conditions that Sanford Weiner has identified as crucial for effective competition—a set of relatively secure organizations that can be made to feel uncertain about their future—"constrained autonomy." Organizations threatened by immediate demise cannot function. Their strength to plan is diminished by the need of their employees to find jobs. Conversely, totally secure organizations are subject to the lethargy of tenure where the creative idea is a rarity and the urge to action is difficult to arouse. Pushed to worry about their futures but not slated for quick disbandment, the services would have the resources, time, and need to think hard about their special talents and contributions to national security.

Competition is not its own reward. The services will be reluctant to provoke one another even on the promise of specific benefits such as budgetary increases or the preservation of favored assets. The risks of significant losses are high for all once the war among them resumes. And the services are not alone in fearing competition. Defense civilians have not shown interest in forcing

McDonnell Douglas

Army AH–64A.

a competitive search for savings or new insights. Witness their recent recommendation to purchase the full complement of C–17 transports when a buy of off-the-shelf Boeing 747s would do nearly as well at $6 to $8 billion less. Congress also seems uninterested, believing that the operational unity mandated by Goldwater-Nichols gave us victory in the Persian Gulf despite the contradictory strategies which the services actually pursued. Moreover members of Congress, deficit reduction pledges notwithstanding, are seeking increases in defense spending to keep the orders flowing for their favorite weapons or contractors. President Clinton is not likely to push the issue, having worked hard to gain the support of the military after early missteps.

The unintentional initiator of the next wave of interservice competition may well be average middle class citizens, who we know from opinion surveys want taxes cut, their parents' Medicare and Social Security benefits preserved, their police, schools, environment, and recreational areas maintained, and welfare—foreign and domestic—drastically cut. To get their vote, politicians may have to forfeit defense. Ships may have to be tied up, troops called home, and planes grounded.

But this sacrifice in military readiness will not be totally in vain. With fewer dollars and more friction, the services will have to think harder about the threat and how the Armed Forces can meet it. There is no better incentive to candor, error correction, and creativity in defense planning than a tight budget and a few smart rivals competing for a share of the pie. JFQ

This piece was adapted by the author from an earlier article entitled "The Interservice Competition Solution" which appeared in *Breakthroughs*, vol. 5, no. 1 (Spring 1996), pp. 1–3.

JFQ Forum

SFOR honor guard, Tuzla.
1st Combat Camera Squadron (David W. Richards)

NATO

European Security and Beyond

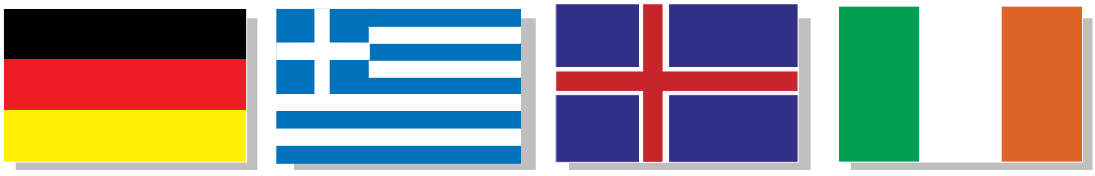
NATO, European Security, and Beyond

Introduced by HANS BINNENDIJK

Long-discussed change in European security architecture is underway. While it may lack elegance and simplicity, this "new order" should prove useful in meeting security problems that face Europe. Its strengths are inclusiveness and a NATO core, and its potential weaknesses are dissatisfaction by lesser included nations and lack of political cohesion to deal with new threats. This JFQ Forum examines a range of security considerations that have been clarified in the wake of summit meetings over the last few months.

The new architecture can be seen as five concentric circles, with NATO command structure and military capabilities at the center, surrounded in turn by a NATO-based European security and defense identity, NATO enlargement to include new members, an enhanced Partnership for Peace program, and NATO agreements with Russia and Ukraine. Most of these arrangements have been formalized through various institutional relationships between the nations of Europe and the NATO core. They reflect the realities of Europe and have been tested by the NATO experience in Bosnia. With adroit diplomacy and political cohesion, this architecture can provide agile responses and can evolve into an even more inclusive system.

Despite a reduction of more than two-thirds in the number of U.S. troops based in Europe, NATO is the most capable military organization in the world. The United States is committed to the continuing deployment of about 100,000 troops. And while NATO retains some of its Cold War structure—including large armor and mechanized formations—it is adjusting to a new era with emphasis on mobility, rapid reaction, and peace enforcement.



NATO is being both streamlined and Europeanized. Headquarters staffs have been cut by a third and the number of commands has similarly declined. Even with downsizing, 75 percent of senior military positions are now held by European officers. The Deputy Supreme Allied Commander Europe, who has responsibility for strategic planning and European-led operations, is British and the chief of staff at Supreme Headquarters Allied Powers Europe is German. Mechanisms have been established to strengthen political control over military operations. Moreover, as General Joulwan notes in his article, a new array of concepts such as the combined joint task force, Partnership Coordination Cell, and ACE Mobility Coordination Center were put in place to deal with new partners and new missions.

Closely related to the NATO core is the process of making the relationships among Alliance members more equitable. While Europe continues to struggle with monetary union and a common security policy, articles on European security and identity and the Western European Union (WEU) in this issue note that progress has been made in creating a "separate but not separable force" based on a revived WEU. Now that the future rests squarely on NATO, analysts on both sides of the Atlantic applaud enhancing Eurocorps and efforts like the Italian-led operation in Albania. But some transatlantic problems remain, as highlighted by the Franco-American dispute over who commands at Allied Forces Southern Europe. Theater commands are much more important today than during the Cold War, and relinquishing the only theater command in Europe under American leadership could undercut public support for NATO in the United States.

Enlargement forms the next concentric circle. Poland, Hungary, and the Czech Republic are seen as consensus candidates for early membership in the Alliance at the Madrid summit while Romania and Slovenia have garnered strong support within Europe. Some

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critics argue that enlargement is unnecessary for central Europe and dangerous for relations with Russia, but time has proven them wrong. The process of qualifying for membership in the Alliance has solidified democracy as well as civilian control of the military in candidate countries. In addition, it has eased ethnic and border tensions among candidates as they realize that Europeanization is more critical than local politics. And Russia, though still uneasy about enlargement, has acquired a number of security advantages under the Founding Act that it might not have gained otherwise. But the debate about enlargement is far from over as legislators on both sides of the Atlantic determine what price they must pay for ratification. The cost is estimated to be about $30 billion over the next 12 years, of which the United States would pay less than 10 percent. The debate will probably start in the Senate, and Europeans will wait to see if President Clinton gets the required two-thirds vote. In the end, the Senate will probably support enlargement, but the debate could start a new transatlantic burden-sharing dispute that the rapidly changing Alliance ought to be spared.

Most central and east European nations will be left out of the first round of enlargement, and measures must be taken to promote reform and security enhancement in the region. Although the process will remain open, many countries will take little comfort from this promise since they fear that some time must pass before the Alliance adjusts to the first tranche. Future candidates can be divided into four groups. First, Romania and Slovenia were strong contenders in the first round of expansion, but their membership is expected to be delayed. They need a clear perspective for further membership. Second, former neutrals such as Austria, Sweden, and Finland will be admitted when they become convinced that neutrality within the new Europe is an anachronism. Third, the Baltic States have made significant economic and political progress, but their status as former republics of the Soviet Union could create such a negative reaction in Russia that overall security might not be helped by their membership. And fourth, Balkan nations such as Bulgaria, the Former Yugoslav Republic of Macedonia, and Albania may need a decade or longer to prepare for membership. To help maintain security among these groups, NATO will depend on enhancing the Partnership for Peace. With enlargement, however, this program could be weakened as its key members join NATO. So a larger-than-planned effort—including significant funding—may be required to shore up security for countries that face a long period of preparation. The new Euro-Atlantic Partnership Council will help if it does not become moribund as did its predecessor, the North Atlantic Cooperation Council.

Finally, NATO has established a new relationship with Russia, formalized by the signing of the Founding Act in Paris. The act builds on NATO's earlier 16-plus-1 consultative arrangement with Russia and on close NATO-Russian military cooperation in Bosnia. Although NATO made no concession that allows a veto of non-article V operations, Russia will have a voice through the Joint Council. Those critics of the Founding Act who generally support enlargement, such as Henry Kissinger, fear that once Russia is formally a member of NATO-related councils, it may use the consensus process to its advantage by convincing other nations to oppose proposals that it does not favor. NATO must make it clear to Russia that any abuse of the new council will not be tolerated. Ukraine too has negotiated a new agreement with NATO and with Russia as well.

The major test of the emerging European security architecture will be Bosnia. Differences of opinion exist on both sides of the Atlantic on when Stabilization Force should be terminated and what to do in the interim. Many Americans want the mission to end on schedule next summer and be replaced by a European-led force. But it is highly unlikely that many Europeans will revise their "in-together, out-together" stance, so an all European force for Bosnia may be stillborn. A complete withdrawal is likely to reignite conflict among Bosnia's ethnic groups. Meanwhile, we must avoid the pitfalls of Somalia—taking sides and expanding the mission as force structure declines.

This JFQ Forum also examines issues that are likely to confront the Atlantic Alliance in the future including the continued presence of U.S. dual-capable aircraft and nuclear weapons in Europe and instability in Sub-Saharan Africa. Accordingly, the articles that follow cover both the high and low ends of future NATO security problems. The new security architecture will need to deal with a broad array of threats in order to succeed. **JFQ**

SFOR activation ceremony, Sarajevo.

U.S. Air Force (Michael Featherstone)

The New SHAPE of the Atlantic Alliance

By GEORGE A. JOULWAN

The new streamlined military structure that has emerged under the Supreme Headquarters Allied Powers Europe (SHAPE) is a worthy successor to the organization which kept the peace for more than four decades. Today it has both a crisis response center and a joint operations center and provides oversight and guidance to components of Allied Command Europe (ACE), including Stabilization Force (SFOR) in Bosnia. In addition, SHAPE has developed a strong European security and defense identity (ESDI) within a broader transatlantic framework. This transformation did not occur overnight but has been underway over the last three years. Because of these changes SHAPE and ACE now can respond to crisis or conflict across a full range of contingencies—from humanitarian or peace operations to collective defense. SHAPE will ensure that the Alliance is not soft anywhere or anytime it is committed—from peace operations to collective defense. This article details changes in this dynamic headquarters and the role which it is now playing for the Alliance, the North Atlantic Treaty Organization (NATO).

General George A. Joulwan, USA, is Supreme Allied Commander, Europe, and commander in chief, U.S. European Command.

The Brussels Summit

Based on political guidance which emanated from the January 1994 NATO summit meeting held in Brussels, SHAPE developed an operational concept to link the Partnership for Peace (PFP) program and combined joint task force (CJTF) initiative. The guidance called for evolving PFP to enable missions to be executed by PFP members and NATO forces. The rationale underpinning this operational concept was to exercise with our new partners by training to common standards, doctrine, and procedures. Establishing this solid foundation would prepare our partners to operate under a NATO or non-NATO led CJTF. The opportunity to put theory into practice came just over two years later when NATO led an implementation force to bring peace to Bosnia.

SHAPE developed an operational concept to link the PFP program and the CJTF initiative

Under this concept, SHAPE must quickly translate political and military instructions from NATO headquarters into guidance and operation plans for its subordinate commanders to execute. This is essential to the success of all NATO missions—from article 5 operations to less traditional missions such as peacekeeping, humanitarian assistance, and disaster relief. NATO headquarters and SHAPE have adjusted to the post-Cold War environment. Far-sighted diplomats, strategists, and defense planners have kept abreast of changing security requirements. It is clear that the threat of attack against members of the Alliance is low. But collective defense and force projection must continue to buttress a strong and stable Europe. The need for a robust and flexible NATO remains because of uncertainty and instability. SHAPE has adapted to meet these challenges and has taken advantage of the proven security architecture that NATO has provided over so many years.

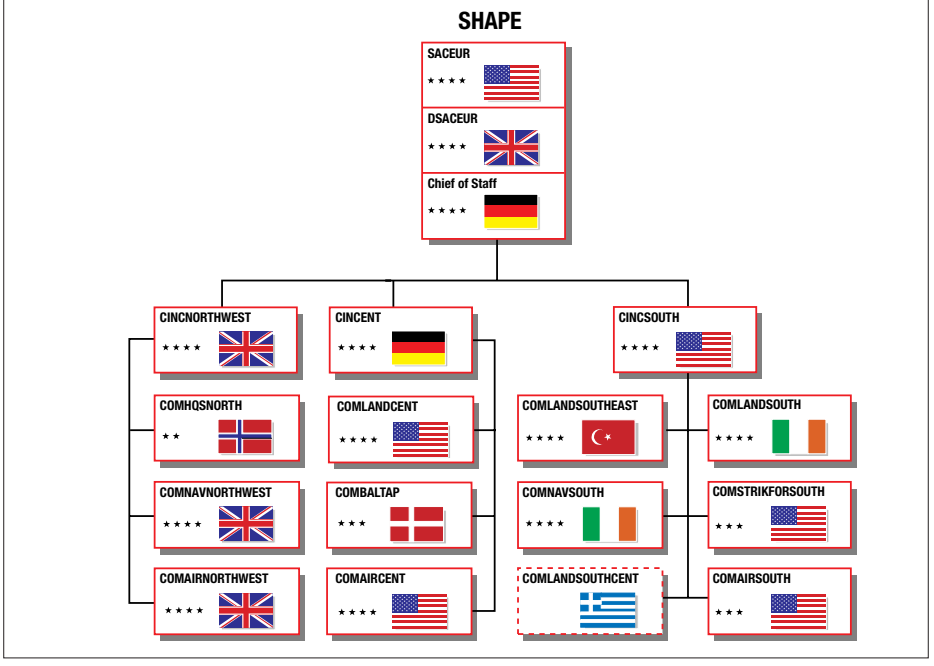
In brief, SHAPE must identify, balance, generate, and move NATO and non-NATO forces to arrive at the right place and right time as needed by major subordinate commands (MSCs) which are responsible for the training-to-mission of NATO forces and certification of non-NATO forces. MSCs also mount key headquarters, such as the ACE Rapid Reaction Corps, and assist in movement control of earmarked units. In addition, the headquarters provides the flexibility to augment the staffs of committed headquarters with hundreds of officers and non-commissioned officers. SHAPE and ACE did that for Implementation Force (IFOR) headquarters and now SFOR. Operations Joint Endeavor and Joint Guard have proven that our post-Cold War organization theory is sound. This is SHAPE: dynamic, flexible, and relevant to the challenges of a new NATO and a new Europe. Indeed we have put theory into practice.

From Theory to Practice

SHAPE has responded well to planning and support for operations in Bosnia. When the Supreme Allied Commander Europe (SACEUR) was given overall responsibility for the Bosnian mission, SHAPE rapidly developed a concept of operations and operation plan that was approved by the Military Committee and North Atlantic Council. The quick response resulted from several innovations in SHAPE methods of operation. Of particular interest was the increased use of the Deputy SACEUR (a British four-star) and chief of staff (a German four-star). First, a revitalized ACE Reaction Force planning staff (ARFPS) under the Deputy SACEUR was directly responsible for strategic planning. Second, the SHAPE Crisis Response Center was activated in winter 1993–94 to monitor the worsening crisis in the former Yugoslavia.

The Crisis Management Organization (CMO)—which has existed on paper since SHAPE was established—was activated late in 1995 to coordinate Joint Endeavor for SHAPE. It consists of cells from the peacetime SHAPE organization with operations, intelligence, logistics, mobility, resources, public information, communications, and systems divisions, plus IFOR liaison teams, making up most of CMO. It not only coordinates the IFOR effort but advises both SACEUR and NATO headquarters on significant events or any change in the situation. The chief of staff and the assistant chief of staff for operations and logistics at SHAPE direct the CMO effort.

Figure 1. NATO Military Command Structure in Europe



Danish Stinger missile radar tracking team.

U.S. Air Force (Robert Stuart)

F–15s over Denmark, Tactical Weaponry '95.

1st Combat Camera Squadron (Jeffrey Allen)

In the key area of force generation and movement, the ACE Mobility Coordination Center (AMCC) is an example of the new SHAPE; it is effective and efficient in its operational mission. Since December 1995 the center has worked closely with participating NATO nations to ensure that all deployment plans and force movements match the priorities set by the IFOR commander. It has also deconflicted movement problems, such as too many ships in a limited port, through negotiated solutions with both the nations involved and the Joint Movement Control Center in theater. AMCC also coordinated with non-NATO nations—Russia, for example—to match their deployment plans with the overall flow of forces. The Deputy SACEUR led in this critical area and, with AMCC, he has responsibility for generating, balancing, and deploying the force.

The AMCC multinational staff relies upon the allied deployment and movement system to coordinate force deployment. This state-of-the-art software, operated by the NATO C^3 Agency (formerly the SHAPE Technical Center) at The Hague in the Netherlands, furnishes NATO nations with a common deployment planning tool. The system reduces deployment time and permits users to control and deconflict deployment plans. It is installed in the capitals of most member nations and allows AMCC to accurately track movements of troops, equipment, and logistical support into theater. This system has been invaluable to the simultaneous movement of multinational forces into the IFOR area of operations. The results have been truly impressive.

NATO, together with many of its partners and friends, deployed 50,000 troops to Bosnia to help establish the conditions for a just and lasting peace. IFOR, under the strategic direction of SHAPE and with proven NATO procedures, deployed and closed the force within 60 days. Well over 2,000 flights, 50 ships, and nearly 400 trains moved more than 200,000 tons of cargo and 50,000 troops into very difficult terrain under severe winter weather conditions. IFOR engineers skillfully and courageously spanned the swollen Sava River. Under the watchful eye of SHAPE, troops poured into Bosnia and Croatia—simultaneously and safely—via land, sea, and air. Many non-NATO nations also have joined the effort including 17 troop-contributing countries. Counting NATO members, more than thirty nations have committed forces, making Joint Endeavor a truly international effort.

Due in large part to the professional deployment and robust response by IFOR troops when NATO assumed

the mission on December 20, 1995, the former warring parties immediately began to comply with provisions of the Dayton accords. And since our initial deployment the operation has been an overwhelming military success. The warring factions were separated by 4 kilometers in 30 days, land transferred in 90 days, and heavy weapons moved to storage sites in 120 days. In addition, illegal checkpoints were eliminated and freedom of movement improved by the reopening of Sarajevo airport plus the reconstruction and repair of many railways, roads, and bridges. The cooperation between military forces and civilian agencies responsible for rebuilding the nation was truly significant. Together we began the process for ensuring a lasting peace in Bosnia.

NATO forces have assisted civilian agencies with economic development and other activities

Specifically, NATO forces have assisted the civilian agencies with economic development, reconstruction, police, and other activities essential for mission success. The military has helped the United Nations and other non-governmental organizations to establish the best conditions for success. Working with these agencies we broke the cycle of war to provide a secure environment. The civilian agencies continue to implement their plans and take advantage of the momentum for peace in Bosnia. The September 1996 elections, an integral part of the Dayton agreement, were a significant milestone and validated our efforts in that war-torn country.

The 12-month IFOR mission ended in December 1996. To maintain the peace momentum, the North Atlantic Council authorized a follow-on force to ensure a secure environment for civilian agencies to complete the mission. Today some 31,000 troops, still under the strategic guidance of SHAPE, continue this NATO peacekeeping effort.

Mine detection training along Route Arizona, Bosnia.

55th Signal Company, Combat Camera (Jon E. Long)

USCG Gallatin in German port, Baltops '96.

U.S. Coast Guard (Robert Wyman)

New Partners and Friends

It was encouraging to see the readiness of so many non-NATO countries to contribute forces, provide logistics support, and allow transit of IFOR contingents. The contributions by our partners demonstrated the validity of PFP as a firm basis for planning and coordinating with them. Our new partners—including former adversaries—provide units and personnel to meet vital SFOR requirements. It is no longer "us versus them"—but one team working to bring peace to Bosnia.

International support has been critical to IFOR and SFOR, but perhaps no factor is more historically significant than the NATO-Russian cooperation that developed with Joint Endeavor and continues in Joint Guard. This relationship has fostered trust and understanding between Russian officers and their Alliance counterparts at all levels of planning and execution. With Colonel General Shevtsov as my deputy for Russian forces at SHAPE, we have forged command and control arrangements to preserve unity of command and effort. I exercise operational control over the independent Russian brigade and assign missions to it through General Shevtsov. In theater this Russian unit is under the tactical control of Multinational Division North.

This arrangement proves that two former adversaries can work together to achieve peaceful goals through military cooperation. This mutual trust is a direct—and natural—result of a genuine partnership in a common mission. Moreover, this shared mission has increased contacts between NATO and Russia. Dealings that once took place only every 18 months have become everyday occurrences as the SFOR mission continues. General Shevtsov meets routinely with me and the SHAPE staff, which provides us with a forum to address issues of mutual interest. In addition, he visits NATO member nations as well as partner countries. Clearly this relationship is a giant step toward building trust

and confidence between former adversaries and a significant indication of SHAPE's adaptation to the realities of a new Europe.

The Future

The Partnership Coordination Cell displays 43 flags, 16 from NATO members and 27 from countries which have joined the PFP program, arranged alphabetically from Albania to Uzbekistan. Twenty of these nations have liaison officers in the cell who underpin a new European security structure—one based on mutual trust and confidence from working together for common goals and missions. This security relationship is replacing decades of mistrust in Europe and is grounded in cooperation rather than confrontation.

This new spirit of NATO is thriving at SHAPE. Such multinational military cooperation, together with political guidance and control, provides the best approach to crisis management and preventing narrow nationalistic concerns from dominating European security and defense thinking.

NATO, ACE, and SHAPE are as relevant today as they were during the height of the Cold War

One clear objective of the new SHAPE has been the development of ESDI within a strong transatlantic alliance. As mentioned earlier, both the Deputy SACEUR and SHAPE chief of staff are Europeans who have substantive terms of reference. From 1951 to 1993 the chief of staff was an American four-star; now the post is held by a European officer (see figure 2). The chief of staff of ARFPS and the Combined Joint Planning Staff is a European three-star and the PFP Coordination Cell is headed by a European two-star. Both have played critical roles in the success of Joint Endeavor. Likewise these officers would bring a distinct European identity to the planning and execution of any future Western European Union (WEU) operation.

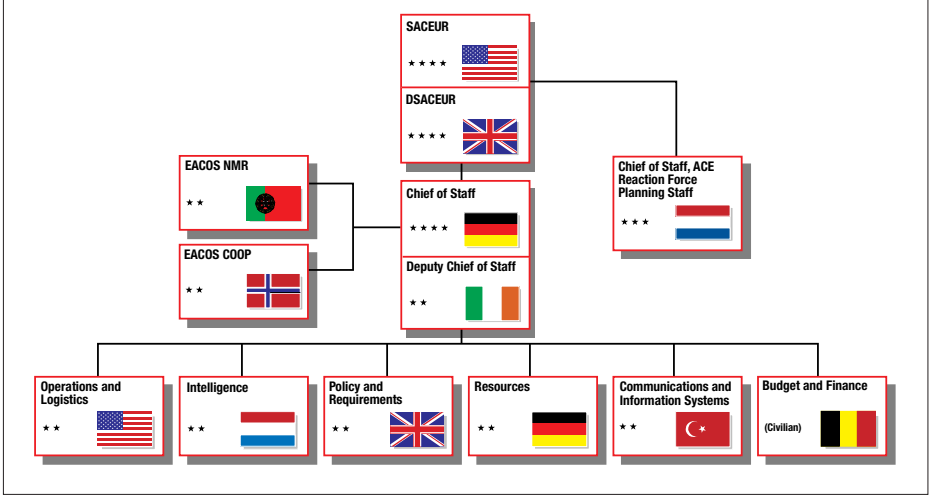
Moreover, the Deputy SACEUR serves as the official contact between SHAPE and WEU, a relationship that is being institutionalized. The respective staffs meet and discuss procedures and techniques. I have addressed the WEU Assembly in Paris and WEU Council in Brussels. In fact, the latter body has been briefed at SHAPE, and more robust terms of reference are being drafted for the Deputy SACEUR consistent with the principle of unity of command. Most important, SHAPE is eager to continue its adaptation to enhance ESDI while improving the Alliance's ability to execute missions across the entire contingency spectrum.

It is apparent that the Alliance is flexible and has adapted to the security realities of our day. We have shown that given clear political guidance NATO's operational military arm can perform new missions and accomplish any tasks assigned by its political leadership. SHAPE is a dynamic headquarters attuned to new requirements and organized to meet the challenges of the next century.

As I have pointed out many times, NATO, ACE, and SHAPE are as relevant for security today as they were during the height of the Cold War. Our new missions will take us well beyond the collapse of the Berlin Wall, the fall of the Iron Curtain, and the defeat of an ideology. SHAPE and ACE have streamlined their operations and command structure to meet future challenges.

With new friends and the experience of the mission in Bosnia, we have an opportunity to revamp our security arrangements in Europe—based on a vibrant transatlantic alliance and strong ESDI. While we adapt and maintain flexibility in force structure, SHAPE will continue to build on a foundation of over 45 years of military cooperation based on continued shared values, ideals, and respect for the worth and dignity of the individual. This is a relationship that we are prepared and eager to develop with our new partners and friends in Europe. For NATO is more than a group of allies—we are friends united in a common vision with a common purpose and objective. SHAPE is approaching the 21st century with confidence, optimism, and commitment to a superb alliance. We are truly creating *one* team with *one* mission—and the NATO mission continues. JFQ

Figure 2. SHAPE Command Group



This is an updated version of an article that was originally published in *Dawn of a New Europe* (November 1996).

CREATING A *European* SECURITY AND DEFENSE IDENTITY

By CHARLES L. BARRY

The notion of a unified European military is nothing new. It was raised after World War II as a means of ridding the Continent of its legacy of internal warfare and nearly succeeded before falling victim to fears of lost sovereignty. Forgotten but not completely abandoned, it was revived in 1987 under more favorable conditions after the awakening of a long-dormant defense institution, the Western European Union (WEU).

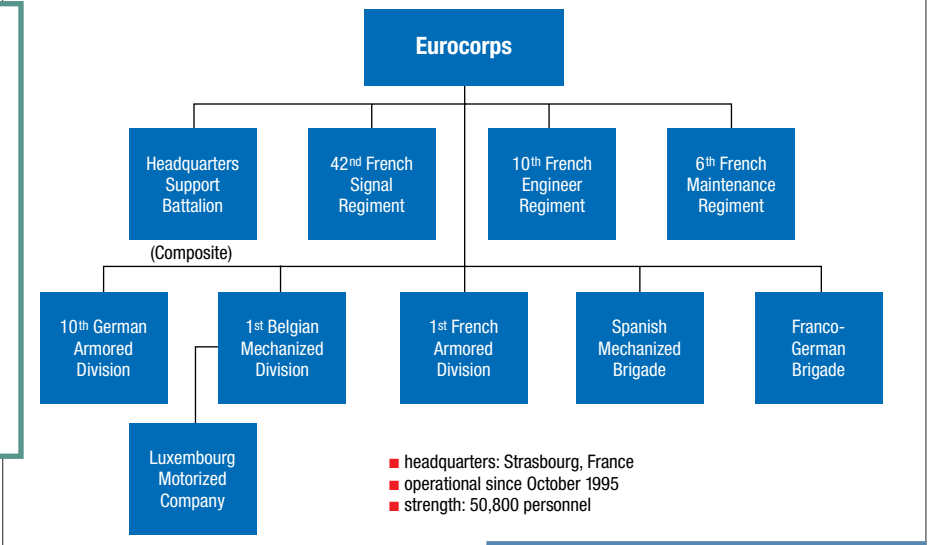
The born again WEU called for greater cooperation on security and defense (including arms production) noting that, "Europe's integration will never be complete so long as it does not include security and defense." The effort moved slowly at first but then gained momentum with the end of the Cold War. With the final outcome still uncertain, however, the idea of portraying Europe as a more or less free-standing pillar of NATO assumed the awkward rubric of European security and defense identity (ESDI). Now ten years old ESDI seems here to stay.

Initial American reactions to ESDI were polite but proscriptive, emphasizing that it should be transparent and complement NATO. Moreover, the United States saw it as an internal European matter unlikely to have major implications for the Alliance. But France, always an advocate of greater independence from the United States, saw ESDI as a means of reducing American influence after the demise of the Soviet Union. Future U.S. force levels in Europe were unpredictable, and France pointed to the possibility of a complete American pullout, raising the fear among Europeans that they might be left to fend for themselves and thus need their own defense capability.

Simultaneously, American political interest in Europe appeared to wane. Key U.S. posts at NATO went unfilled for long periods in 1993 and Washington was focused on the Asia-Pacific region and domestic affairs. Political interest in Europe seemed relegated to central and eastern Europe and Russia. America's limited participation in Bosnia and differences with its allies were taken as more evidence that

Lieutenant Colonel Charles L. Barry, USA (Ret.), is a visiting research fellow in the Institute for National Strategic Studies at the National Defense University.

Figure 1. European Military Formations



European Force (EUROFOR)

- France, Italy, Portugal, Spain
- operational since November 1996
- division-size reaction force
- headquarters: Florence, Italy
- strength: 10–15,000 personnel
- earmarked light forces:
  - —infantry
  - —armor
  - —artillery
  - —special operations

European Maritime Force (EUROMARFOR)

- France, Italy, Portugal, Spain
- operational since late 1995
- maritime reaction force
- headquarters: Toulon, France (*rotational*)
- typical task force:
  - —aircraft carrier
  - —4–6 escort ships
  - —landing force
  - —amphibious force
  - —supply ship

Europe would need its own resources in the new era.

ESDI was not based exclusively on an American-related rationale. Europeans worry more than Americans about a resurgent Russia, and ESDI may be a hedge against Russian intimidation in regional affairs. Last but not least, securing Germany's emerging role in collective security is regarded by most Europeans—including the Germans—as essential.

At the NATO summit in January 1994 the United States joined its allies in endorsing ESDI. However, this was less a shift in the American or European position than it appeared. There followed a two-and-a-half year struggle to agree on the means to fulfill the summit pledge that NATO assets would be provided to WEU as necessary to field an ESDI force under the combined joint task force (CJTF) concept. A definitive endorsement of ESDI was finally reached at the June 1996 NATO ministerial meeting in Berlin, and the way was cleared to provide a European defense capability without the cost of duplicative military structures. Since then there has been a display of transatlantic unanimity on ESDI, although many outstanding issues remain. Washington is at last taking serious note of the ESDI phenomenon on both the strategic and operational levels.

to many people ESDI is only a vague theory on the periphery of serious military activities

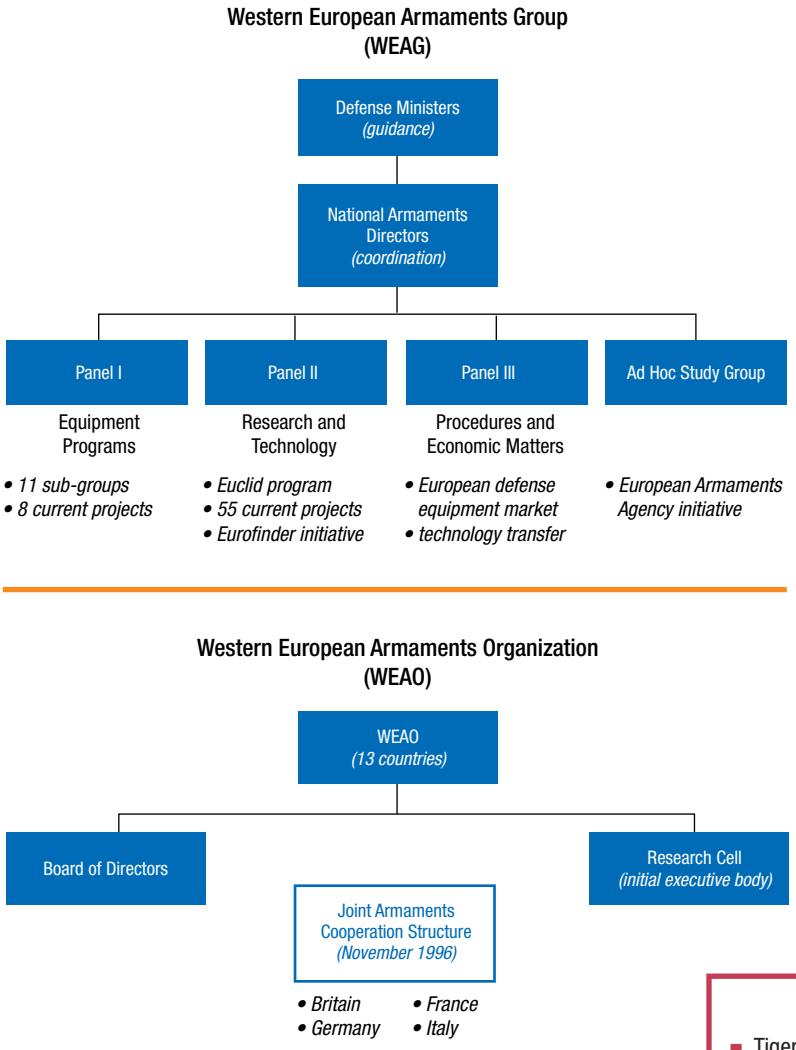
Defining ESDI

Why can't Europeans move beyond the ungainly acronym ESDI in describing their search for military cohesion? The answer is that the intended endstate remains uncertain. Many nations in Europe still adhere to the concept of independent action even as national militaries become less and less tenable within the transatlantic framework.

To many people ESDI is only a vague theory on the periphery of serious military activities. A consistent caution heard on both sides of the Atlantic is not to make too much of it too soon. However, three realities must be understood in assessing its potential or even its survival. First, there are many obstacles to creating one force from many. The most salient remains sovereignty. Yet Europeans reject renationalization of defense and have steadily surrendered sovereignty since integration began in 1951. Second, the decade-old ESDI initiative, while seemingly at a standstill on occasion, shows no sign of vanishing. In fact, the opposite is true, with our most stalwart ally, Britain, backing ESDI. Third, the original motives for creating ESDI endure: to counterbalance the United States and Russia in European affairs, provide an option when American and European interests diverge, and pursue the logic of bringing integration to the fields of security and defense.

Another rationale has emerged of late. Economic strains have left some countries in Europe with no alternative to consolidating declining military establishments and defense industries. Some national forces are all but unsustainable. Defense industries can no

Figure 2. European Arms Cooperation Activities



longer operate independently, nor can new systems be fielded by a single nation. For the United States, which needs a stronger partner in Europe, ESDI is an initiative to encourage.

Hard Evidence

The value of ESDI will ultimately be measured by the forces that Europe actually deploys. As military analysts know, however, forces are embedded in institutions and capabilities. In fact, ESDI is manifest in several venues of security and defense, political and military. The evidence is found in at least five broad areas: European Union (EU) political actions under the common foreign and security policy (CFSP), a wider WEU role visibility inside NATO, armaments cooperation, multinational formations, and military operations. The place to begin a description of ESDI is with common EU security policies where political agreements are embodied.

Common Foreign and Security Policy. This pillar is the most visible evidence of collective political will to create a recognizable European identity in broader security terms. Thus far CFSP has been limited to lightweight activities such as aligning EU political influence around the world through financial contributions. Its most significant actions have been to establish a framework for EU relations with Burundi, Rwanda, and Ukraine. Under CFSP, EU has arranged humanitarian aid to Bosnia-Herzegovina, administered the town of Mostar (with WEU), and sent observers to elections in Russia, South Africa, and the Middle East. But this is thin gruel in terms of security affairs, even for a mechanism not yet four years old. The diverse cultures, history of war among EU members, and differing concepts of integration dictate that CFSP initiatives will remain small, especially in peacetime when national priorities come to the fore.

An effort aimed at strengthening CFSP decisionmaking was sought at the 1996–97 EU intergovernmental conference. But the agreement to be reached at the Amsterdam summit in June 1997 had very little import for CFSP. One shortcoming addressed in Amsterdam was the planning staff. A small group will be formed by dual-hatted council secretariat personnel and civilian and military national representatives. Advances in other areas may also strengthen CFSP. Procedures were accepted for qualified majority voting on minor decisions, and "constructive abstention," whereby unwilling members would agree to not block actions by willing members, might be agreed upon.

Major European Joint Ventures

- Tiger attack helicopter
- NH–90 utility helicopter
- future large aircraft
- Eurofighter 2000
- Horizon frigate
- family of wheeled armored vehicle
- Tornado fighter
- Euromissile

Western European Union. Responsibility for developing ESDI operationally inside NATO and as a separable but not separate capability rests with WEU. Since moving to Brussels in 1993, a new WEU has steadily evolved, though its main effort has been internal: institutional structures, staff procedures, data collection, and military

Italian guided missile destroyer *Impavido*.

U.S. Navy

planning. Externally, WEU has built ties to EU and NATO and has created several types of WEU-related standing for the non-union members of both, along with central and east European countries (including Russia and Ukraine) and some southern Mediterranean nations. The union meets routinely with non-WEU states and includes them when developing positions on European security, thus adding to the weight of those views. More than twenty countries have pledged forces to WEU to conduct European-led crisis response operations.

Since 1988 the union has conducted several military operations. But overall decisions to engage militarily have been marked by political caution rather than a desire to further ESDI. While the reasons for caution are complex, two predominate. One is a reluctance to undercut American engagement by signalling a substantial capability for Europe to act alone. The United States might then use ESDI as a pretext for further reducing its presence in Europe. The other is an aversion to risking action where success is not guaranteed. To field ESDI both cautions must be overcome. Exercises, defense investments, and working closely with the United States are required. WEU has completed its first series of crisis management exercises with satisfactory results. Given fiscal constraints and the need to maintain momentum toward the first real "Petersberg" operation, WEU will have to rely on simulations. As NATO and the United States learned, simulations not only enhance staff skills but strengthen political-military decision-making and organizational confidence.

Armaments Cooperation. Until the functions of the Independent European Program Group (IEPG) were transferred to WEU in 1992, cooperation in armaments existed only as a forum for information sharing for 16 years. With the ultimate aim of creating a strong European Armaments Agency, the Western European Armaments Group (WEAG) seeks to coordinate not only research and technology but cooperative equipment programs and common economic policies (see figure 1). WEAG coordinates with arms industries through the European Defense Industries Group. Recent reforms have increased the number of programs implemented and cut delays. In November 1996, the Western European Armaments Organization became a subsidiary activity. These structures, as well as WEU itself—which has interests in space intelligence initiatives because of investment in the Torrejón Satellite Center—represent the state of ESDI in defense industrial base cooperation.

More than any other area of defense, arms production cuts close to the bone of sovereignty. The major arms-producing nations—Britain, France, Germany, and Italy—defend less efficient capacities on political, security, and economic grounds. Jealously over taxes and jobs and the lack of common business law have precluded mergers to rationalize European defense industries. While cooperation exists it comes via costly and time-consuming joint ventures. Industrial consolidation in America is well ahead of that in Europe because it is not saddled by pluralistic political structures.

Multinational Military Forces. The key indicators of ESDI are multinational, particularly Eurocorps, European Force (EUROFOR), and European Maritime Force (EUROMARFOR), and there are also other units, including NATO corps. Except for NATO Allied Command Europe Rapid Reaction Corps—which has potential as an ESDI force under NATO—no other formation has representation from more than five countries and several are bilateral.[1] Some have specific headquarters while others are simply planning and coordinating arrangements which allow for combined training and operations.

Eurocorps, EUROFOR, and EUROMARFOR are salient in assessing ESDI because they were established outside of NATO; and although available to the Alliance, their priority is to WEU. Of course, including *Euro* in a title is another indication of a desire for European identity even in loose bilateral arrangements like the Franco-British Euro Air Group. One common characteristic of Euro formations is that they are open to other nations that may want to join later. The five-nation Eurocorps, along with EUROMARFOR and EUROFOR and other efforts demonstrate a desire to move beyond agreement and field real capabilities.

Norwegian Leopard tank, Strong Resolve.

U.S. Navy (Mark Therien)

Military Operations. In the final analysis the forces which Europe actually deploys are the measure of its collective defense. WEU has launched a number of operational initiatives to "show the WEU flag." In the 1988 Iran-Iraq war it sent minesweepers to the Persian Gulf. In the Persian Gulf War, it deployed a modest flotilla to assist the American-led task force. Subsequently, WEU showed the flag in the Kurdish rescue operation in northern Iraq. In the Balkans, WEU took part in the maritime arms embargo. It also assisted EU in the Danube River arms embargo operation and policed Mostar with EU. Although not under WEU, the Italian-led humanitarian operation in Albania can be seen as a collaborative effort by some European nations to act together.

A Common Identity

The evidence demonstrates that there is a nascent European identity in security and defense. How strong ESDI will become in a federalized Europe or a Europe of nation-states—or a Europe somewhere in between—is impossible to foresee. What is crucial is that the independent defense establishments of European states are fast becoming unsustainable on any useful scale, even for the major powers. In that respect alone, Europeans have few alternatives to some form of ESDI. In the long run, that bodes well for Europe and the United States. Nonetheless, there are significant obstacles to overcome before a capable and dependable ESDI becomes a reality.

there are significant obstacles to overcome before a capable and dependable ESDI becomes a reality

The first problem is the struggle between supranationalism and sovereignty. What kind of political-military decisionmaking is possible within EU or WEU? The acceptable solution over the next decade or so appears to be strict intergovernmental political relations in EU and almost totally ad hoc operational military commands under WEU for crisis response. Though such arrangements will work in some crises, they fall far short of the homogenous U.S. model or the fully integrated military structure of NATO.

The second concern is resources. Falling European force levels and defense budgets may soon bottom out, but there are few signs of growth, especially in modernization and research. Contributing factors are slow recovery from recession and the struggle to achieve monetary union in 1999. Besides new capabilities, ESDI calls for investing in a deployable logistics system, training and exercises, and a host of related costs, not least for the pending shift of some European countries to a professional force. The more costly part of ESDI lies in strategic assets—capabilities such as command and control structures, strategic lift, space-based intelligence, communications, and automation-information processing systems. There are European proposals to procure at least some capabilities. But decisions thus far tend only to pool meager resources to achieve optimum output from current assets. Little is being invested to acquire added capabilities.

Yet it is a misperception that Europe is militarily impotent today. Its active forces are well equipped and highly trained, and both France and the United Kingdom maintain rapid deployment capabilities. As demonstrated in Albania, by the U.N. Protection Force (UNPROFOR) mission in 1993–96, and with the rapid deployment force sent to Bosnia in 1995, Europe can cobble together its national forces for limited crisis response.

A third challenge is nuclear weapons. In ESDI developments thus far there has been scant mention of these arms. Can Europe's common defense identity be complete without arrangements that address a common nuclear umbrella? Indeed, article 5 of the 1948 Brussels Treaty, on which WEU is established, calls for all members to "afford the party . . . attacked all the military . . . assistance in their power." France and Britain, both nuclear powers, have only the barest bilateral collaboration on nuclear arms. Would a European military not have access to the most powerful weapons of two member states? If so, would non-nuclear states effectively have a veto over nuclear employment? There is much to do in this area before ESDI becomes whole.

There are issues external to ESDI as well. The first is the potential for competition between NATO and WEU. With special emphasis on planning, resource allocation, and political military concepts, which security issues are seen as transatlantic and which as European? Another external issue, of particular concern in dealing with Congress, is the danger of overselling ESDI as a stand-alone European capability. The effect of such a perception is predictable: increased pressure or legislation on the withdrawal of forward deployed forces.

These concerns weigh heavily on the U.S. attitude toward ESDI. Washington is wary of any initiative that competes with NATO for the shrunken defense resources available in European capitals. Any investment in forces or capabilities outside the Alliance will likely translate into fewer resources for NATO. Solutions to the challenges facing ESDI are not readily apparent. They will require time and compromise to resolve.

CJTF Potential

The primary aim of the NATO CJTF concept is to adapt the integrated military structure for new missions by giving it a crisis response capability.[2] A second aim is that it helps WEU realize a European-led capability under ESDI. Soon after the concept was approved two opposing camps emerged, one focused on the primary role of CJTF and the other intent on its secondary role. As the camps worked to thwart each other, CJTF languished in indecision for two and a half years and was occasionally pronounced dead. It had become mired in the larger debate over ESDI and the future of NATO—purely collective defense, or both collective defense and crisis management.

Fortunately, the great potential of CJTF for NATO and WEU was salvaged in June 1996. At a meeting in Berlin, France agreed to the creation of ESDI inside NATO and the United States agreed to both afford it adequate visibility within the Alliance and establish procedures for realizing a capability for WEU use in the near term. At present, CJTF is progressing toward implementation through planning, exercises, and trials under three NATO commands. But like collective defense during the Cold War, embedding the doctrinal concept of CJTF within the Alliance is a long-term effort. CJTF will serve as the basis for military activities and resources within NATO indefinitely. With the Berlin agreement, the same will now be true for WEU.

For ESDI, deploying CJTF represents its operational ability to implement WEU political decisions. A WEU-controlled operation, and hence the composition of the CJTF headquarters and forces deployed, is expected to be smaller than a NATO-led mission. But assuming that the crisis is large enough to concern all its members (not just Europeans), NATO would direct the operation. A related factor in allocating operations to WEU is that it is only in the initial stage of adapting to its new role and has no operational military C^2 structure similar to NATO.

German MiG–29s and American F–16s.

U.S. Air Force (Sean Worrell)

NATO CJTF

- a military doctrinal concept adopted by NATO that will be wedded to the existing, proven—though much smaller—Integrated Military Structure
- primary purpose—to provide the Alliance with a more mobile, flexible military to conduct contingency operations beyond NATO borders
- secondary purpose—with agreement by the Alliance, to provide NATO resources in support of WEU operations for crisis response
- concept agreed upon in January 1994 and implementation approved in June 1996
- three NATO commands initially involved in CJTF testing—AFCENT, AFSOUTH, and STRIKFLTLANT
- doctrinal and procedural development of CJTF concept and modalities for providing assets to WEU will be continuous
- current status—implementation proceeding under NATO and WEU collaboration; trials and exercises commencing for NATO in 1997 and WEU at a later date.

An Alliance Strategy

With a NATO-Russian charter in place and enlargement in train, the major unfinished business of NATO is to clarify the future U.S.-European balance within the Alliance. That suggests a bipolar relationship, one that is equal in terms of capabilities, responsibilities, burden sharing, and notably influence in European security affairs. This

British marine, CJTF Exercise '96.

U.S. Marine Corps (R.L. Kügler, Jr.)

new balance must be achieved together with an extension of the Western security systems eastward over the next 18 months. NATO will find it much more difficult to bring in new members and then recast the transatlantic relationship. At present the allies find it easier to focus on the East, where hopeful states are eager to join the club. Yet as cooperation partners reach the threshold, NATO, WEU, and EU may still be reorganizing and unready for new arrivals. Both tasks should proceed simultaneously.

The central elements of a new transatlantic security partnership will be a greater role for Europe in Alliance decisions, responsibilities, and burdens and a continuing senior partner role for the United States wherever its interests are at stake. The agent for a more unified and independent Europe will be EU. There is no way of predicting when European integration may plateau, but the surrender of national sovereignty in defense will take a long time if it happens at all.

While EU will be the central security-identity organization, WEU will be the principal actor for crisis response and collective defense in matters from former Yugoslavia to security relations with central and eastern Europe. WEU has gained momentum by operationalizing its headquarters in Brussels, absorbing armaments cooperation, and actively engaging in WEU-NATO relations. It will be the expression of European security and decisions to act militarily.

the United States wants Europe to begin making military responses to crises

These developments notwithstanding, political Europe—slowly coalescing toward political union—will not be distinguishable for some time. It will need a senior partner in the security field and not just as a catastrophic insurer. The United States wants Europe to begin by taking on crisis prevention and making initial military responses to crises. In turn, Europe needs assurance that the United States remains fully committed to European security and defense through NATO. Until Europe can acquire capabilities in such areas as intelligence, information warfare, and strategic lift, its military reactions will be largely tethered to U.S. commitments of support in these functions.

In principle, when a crisis is small in scale, European-led diplomatic and military initiatives could end a predicament before it reaches either regional or global proportions. Europe assumes greater responsibility for regional stability, with an engaged, collaborative United States in a close supporting role. When article 5 of the NATO treaty is invoked—or a fast-building crisis takes on global implications—the United States would engage as the logical leading partner. When a crisis recedes to a level where regional management is possible, the United States should disengage.

An ESDI Force in Bosnia?

Could ESDI send a European-led force to Bosnia in June 1998? With the termination of the 18-month Stabilization Force (SFOR) mission under a year away, the question is being asked. Both military and political factors are at play. The military issues can be addressed successfully if a concerted planning effort begins soon. Political issues are more problematic.

Militarily there is little question that an ESDI force could be deployed under WEU, NATO, or even a lead nation such as Italy in Albania. UNPROFOR was overwhelmingly European, and both the 60,000-strong Implementation Force (IFOR) and 33,000-strong SFOR are predominantly European in terms of forces on the ground. All EU countries, NATO members (except the United States), and ten central and east European countries have agreed in principle to provide assets for WEU-led operations. In addition, NATO (including the United States) has stated that if approved in the North Atlantic Council its resources will be used to support a WEU-led CJTF. WEU often refers to the "low end of the Petersberg tasks" as a desired CJTF capability, which means roughly a division-size land force component.

A post-SFOR force might be as large as SFOR overall; however, actual combat forces could be significantly smaller, depending on the situation and risk-assessment as June 1998 nears. For the anticipated peace enforcement mission of a post-SFOR force, there is little doubt that Europe could provide the required combat forces. The United States would have to augment a European-led force with C4I, strategic logistics, intelligence, and lift, and also lead an over-the-horizon rapid reinforcement force, which is within current NATO abilities.

Notwithstanding military capabilities, there are significant political obstacles to a European-led CJTF for Bosnia. The firm European "in-together/out-together" position reflects the deep scars of past disagreements over UNPROFOR. But the United States wants a crisis response strategy where regional capabilities are tapped first and U.S. forces are committed only to ensure that regional capabilities are not at risk of being overwhelmed. Once a crisis recedes to a point where regional capabilities are adequate, the United States wants the flexibility to disengage and go on to other tasks. For that to work in post-SFOR Bosnia, it will be necessary to shift from a U.S.-led to a U.S.-supported (European-led) force without rekindling the conflict.[3]

As senior partner, the United States must take the initiative in post-SFOR planning. It should present its allies with a workable transition plan, an assurance of robust U.S. support, and a credible commitment to allow Europe to take the lead. Military commanders recognize that developing leaders means giving them the tools to succeed as well as the freedom to fail. Congressional ultimatums and intra-NATO confrontations will not build ESDI. If the United States wants to leave Bosnia in June 1998 it will have to work with its allies toward the first bona fide ESDI operation and accept the risk that post-SFOR Bosnia is likely to evolve somewhat differently without U.S. leadership—a risk worth taking.

In the rarely mentioned but ever present contest between the United States and France for influence in European affairs, ESDI is a bellwether. While there is currently no alternative to U.S. leadership, if ESDI succeeds—especially on the volatile subject of the southern flank—Europe will be able to manage crises or mount initial collective defense. Ideally, it will also assume an active role with America in meeting crises outside Europe. When that day arrives, the French perspective will begin to be realized. Today the challenge is harmonizing transatlantic views and furnishing capabilities that the United States and its allies can provide under ESDI to protect their interests. However, with more missions and lower force levels we must not miscalculate by depending on ESDI either too soon or too late. The first test may arise in post-SFOR Bosnia when ESDI becomes a reality and the transatlantic balance is decisively recast forever. JFQ

NOTES

[1] This corps can draw upon ten divisions to form a reaction force with contributions from every NATO member save for Iceland and Luxembourg.

[2] For assessments by the author, see "NATO's Combined Joint Task Forces in Theory and Practice," in *Survival*, vol. 38, no. 1 (Spring 1996), pp. 81–97, and "NATO's CJTF Command and Control Concept," in *Command in NATO after the Cold War: Alliance, National, and Multinational Considerations*, edited by Thomas-Durell Young (Carlisle Barracks, Penna.: Strategic Studies Institute, U.S. Army War College, June 1997), pp. 29–52.

[3] For a discussion of the options after U.S. disengagement, see the author's "After IFOR: Maintaining a Fragile Peace in the Balkans," *Strategic Forum*, no. 62 (Washington: Institute for National Strategic Studies, National Defense University, February 1996).

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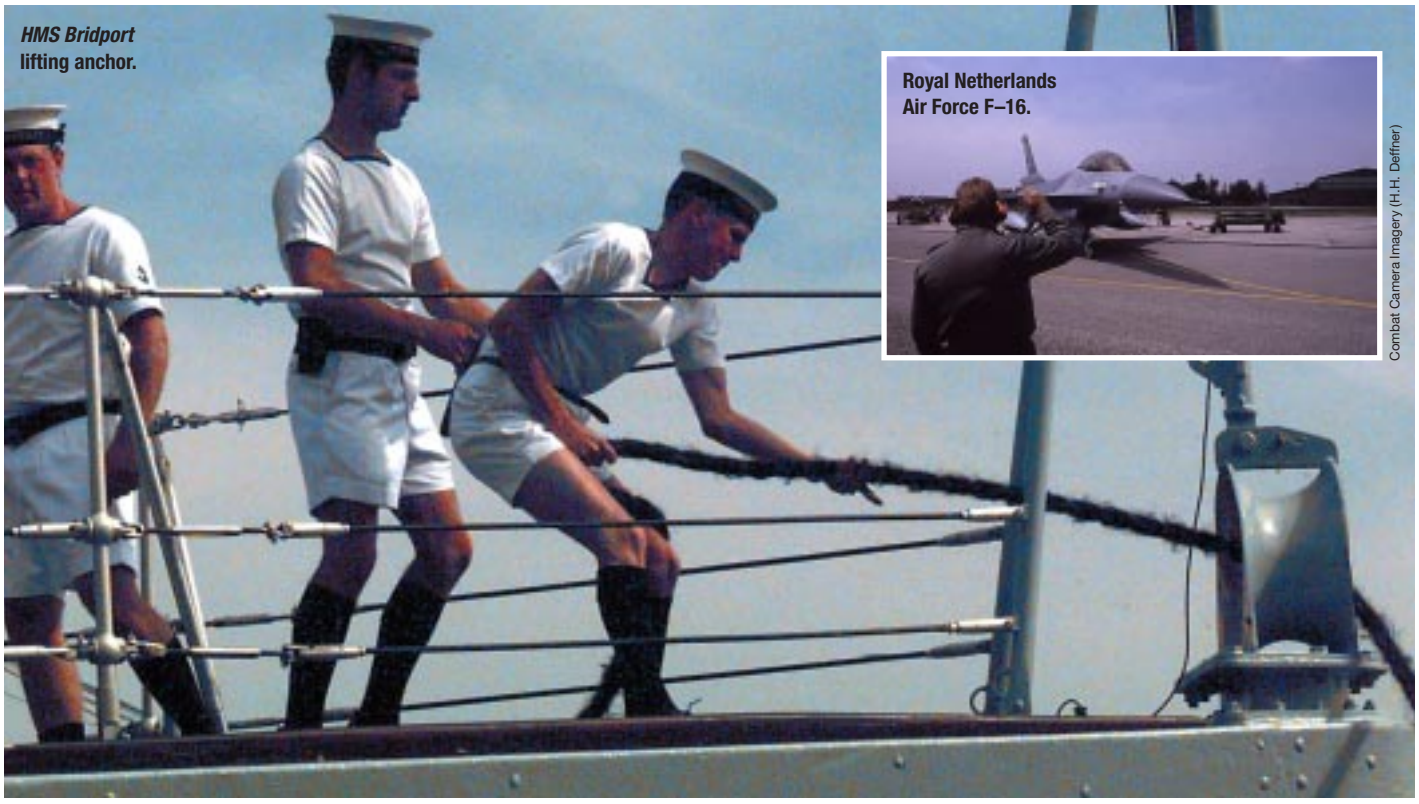


HMS Bridport lifting anchor.

Royal Netherlands Air Force F–16.

Combat Camera Imagery (H.H. Deffner)

U.S. Navy (Elizabeth S. Steward)

WEU Operational Development

By GRAHAM MESSERVY-WHITING

One aspect of European security and defense identity is the evolution of a strong Western European Union (WEU) to provide the political control and strategic direction for Petersberg-type operations as foreseen in the Maastricht Treaty. Such operations include humanitarian and rescue (evacuation and disaster relief), peacekeeping, and crisis management. To execute them, WEU has developed a politico-military decisionmaking process in the Permanent Council, supported by both a politico-military and a military delegates group; strengthened the planning cell under the Permanent Council; and established a situation center (SITCEN) responsible to the Secretary-General via the planning cell director and a satellite center (SATCEN) at Torrejón in Spain (figure 1).

WEU has ten full members who also belong to both the European Union (EU) and NATO (see figure 2). Only these EU and NATO members

Brigadier Graham Messervy-Whiting is a British army officer who currently serves as deputy director/chief of staff of the planning cell at headquarters, Western European Union, in Brussels.

Figure 1. WEU Organization

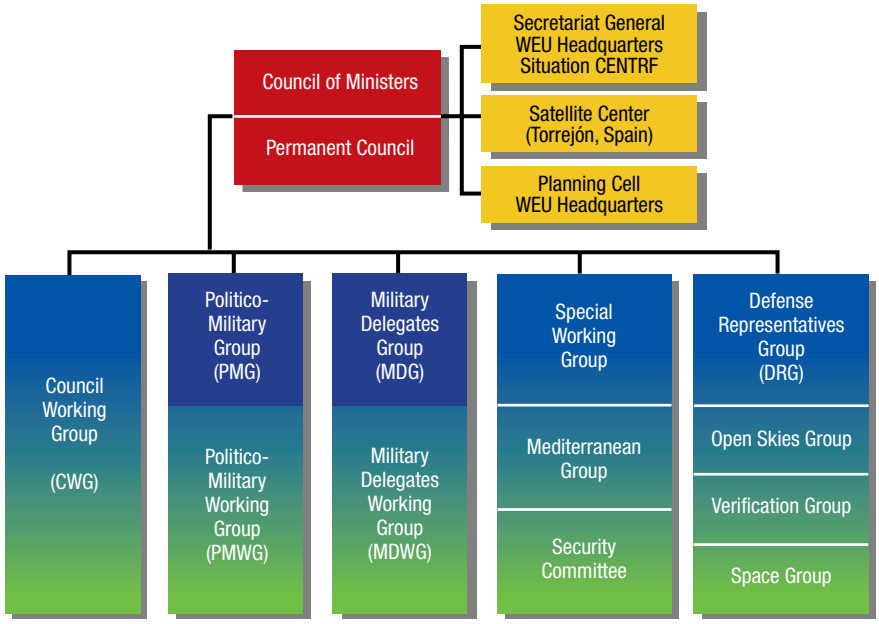
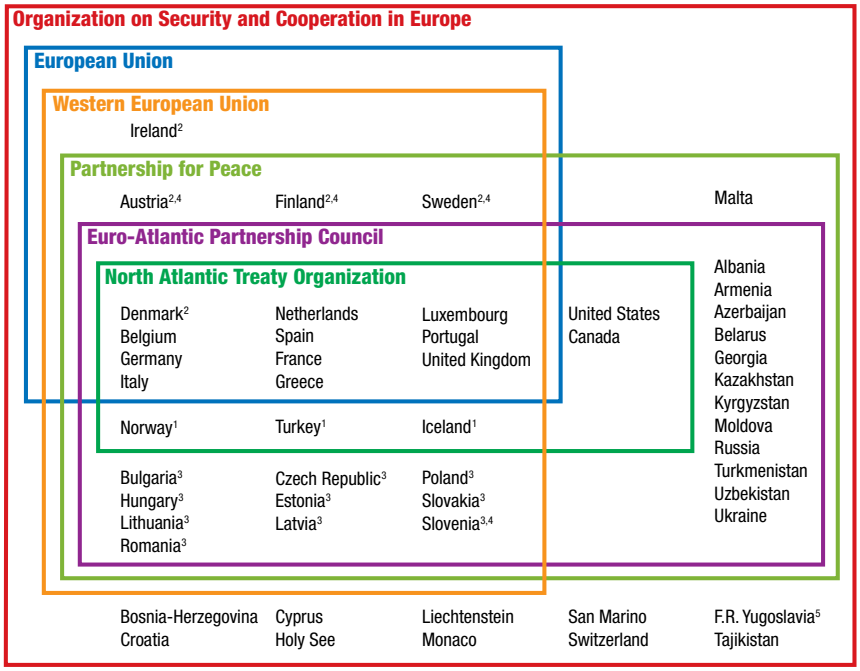


Figure 2. Interlocking European Organizations



[1] WEU Associate Member
[2] WEU Observer
[3] WEU Associate Partner
[4] EAPC Observer
[5] Suspended Member

have the right to make or veto decisions in the Permanent Council. However, although EU membership is mandatory for WEU admission under the Brussels Treaty, NATO membership is a firm albeit unwritten rule. There are three associate members who are

the planning cell is the only military element of WEU that operates in normal times

NATO but not EU members and five observers who are in EU but not in NATO (except for Denmark). In addition there are 10 associate partners, making a total of 28 WEU nations.

Command and Control

One key difference between NATO and WEU is that no permanent military structures exist within the latter except for the planning cell. This is because no forces or command and control assets are permanently assigned. However, this offers a degree of flexibility since WEU has three means of achieving its tasks:

- national Forces Answerable to WEU (FAWEU) which are potentially available for planning purposes and would be employed on a case-by-case basis
- one of five multinational FAWEU—namely EUROCORPS, Multinational Division Central (MND–C), United Kingdom-Netherlands Amphibious Force, European Maritime Force (EUROMARFOR), and European Force (EUROFOR)
- since the Berlin ministerial meeting in 1996, NATO assets and capabilities, including the combined joint task force (CJTF) initiative.

Once the WEU Permanent Council has decided to conduct a particular operation, national, multinational, or alliance assets would provide a military command and control chain which would consist of the out-of-theater operational commander (OPCDR) and his headquarters with a point of contact who provides the personal link between OPCDR and the Permanent Council; the in-theater force commander (FORCDR) and his headquarters; and assigned national forces (figure 3).

Planning Cell Organization

The four-year-old planning cell is the only military element of WEU that operates in normal times. It provides advice on the strategic level to the Permanent Council and has a joint combined staff of 55 members, of whom 40 are military officers (O5s or above) or civilians of equivalent rank including a Norwegian police superintendent and a French coast guard officer. It is important to note that this cell works "at 13"—that is, it only includes European members of NATO (full or associate WEU members). It has six functional sections (see figure 4) making it fully compatible with the nearby NATO headquarters and can be reinforced by additional experts when required.

Communications and Information Systems Section. WEU is linked to secure and insecure NATO voice and data networks under the terms of a memo of understanding (MOU) which became effective in December 1996, immediately prior to phase 3 of the first WEU crisis management exercise (CRISEX). A secure video-conference link was established between WEU headquarters in Brussels and an operational commander with headquarters at Metz-Guise during the exercise. The Permanent Council has approved a comprehensive five-year plan for WEU communications and information technology development.

Coordination Section. This element of the cell is responsible for WEU relationships with other international organizations. Last year a long-awaited agreement was signed with NATO that allowed for the release of documents between the two organizations. Initial exchanges took place between the NATO International Military Staff and WEU planning cell in September 1996. This was followed by an explosion of working-level contacts between WEU functional cells and relevant sections in both NATO headquarters and Supreme Headquarters Allied Powers Europe (SHAPE), as well as a number of outreach programs. WEU modules have been incorporated in the syllabus of the NATO school at Oberammergau and there have been extensive bilateral sessions with the NATO Combined Joint Planning Staff at Mons. The informal monthly coordination meetings which have been held for years were formalized in January 1997 and are now co-chaired at the one-star level.

Intelligence Section. Established in 1995 and staffed in autumn 1996, this section receives intelligence from several WEU nations and issues weekly classified intelligence summaries. It has been tasked by the Permanent Council to monitor Albania, the former Yugoslavia, the Great Lakes region of Africa, and Somalia. It also maintains close working relationships with both SITCEN and SATCEN.

Logistics and Movements Section. With increased activity among members, partners, and associates in strategic mobility, this section is developing doctrine, expanding medical expertise, and creating a network of logistics experts in both international organizations and national capitals. It has gotten access to the NATO deployment and movement system in cooperation with SHAPE and the new NATO communications agency. A mobility working group was formed for the 3000-kilometer air movement of elements of a force headquarters during CRISEX. Important

Figure 3. WEU Command and Control—Operations

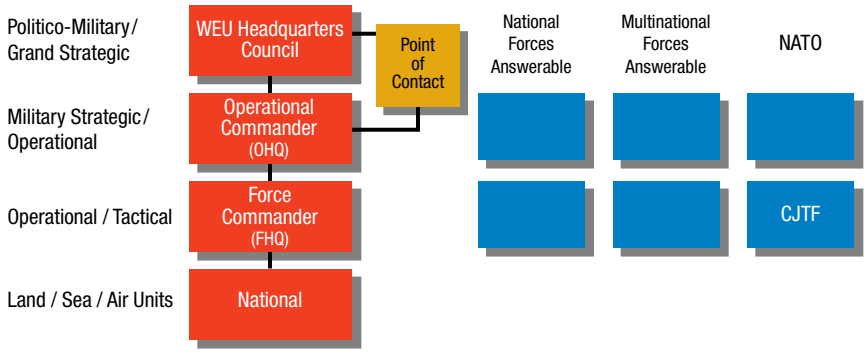
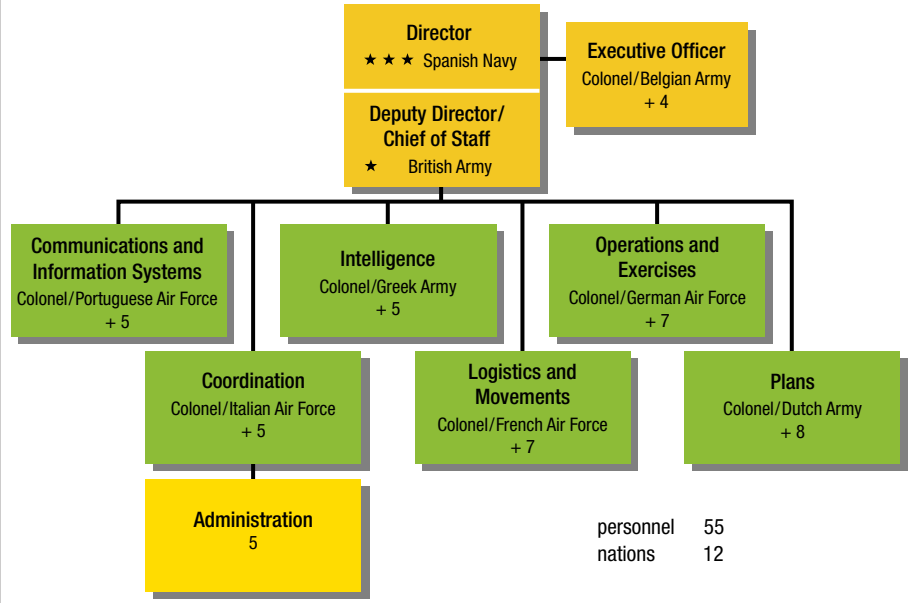


Figure 4. Planning Cell, WEU Headquarters



U.S. Navy (Michael Gallagher)

***FGS Schleswig-Holstein* in the Baltic.**

Western European Union (WEU)

March 17, 1948. Foreign ministers from the United Kingdom, France, the Netherlands, Belgium, and Luxembourg sign a treaty to last a minimum of fifty years in Brussels "for collaboration in economic, social, and cultural matters and for collective self-defense" thus creating the Western European Union.

December 20, 1950. WEU defense functions are transferred to NATO command, but it is decided that the reorganization should not affect the right of defense ministers and chiefs of staff to meet to consider matters of mutual concern to Brussels Treaty powers.

October 20–23, 1954. At a conference of WEU ministers in Paris four protocols which modify the Brussels Treaty are adopted: the Federal Republic of Germany and Italy will accede to the Brussels Treaty, the occupation of West Germany will end, West Germany will be invited to accede to the North Atlantic Treaty; and provisions concerning arms control and British military presence in Europe. These come into force on May 6, 1955.

October 26–27, 1984. WEU ministers adopt the Rome Declaration and also a document on institutional reform. Members support reactivation of the organization to strengthen Europe's contribution to the North Atlantic Alliance and improve defense cooperation among the countries of Western Europe.

October 27, 1987. WEU adopts the "Hague Platform on European Security Interests" which defines conditions and criteria for European security and responsibilities of WEU members.

June 1992. Ministers adopt the Petersberg Declaration agreeing that WEU should have a military capability in order to take part in peace and humanitarian operations at the request of other international organizations.

Source: *The Statesman's Year-Book, 1996–1997* (133rd edition), edited by Brian Hunter.

links have been forged with international agencies including the U.N. Department of Humanitarian Affairs and the European Community Humanitarian Office.

Operations and Exercises Section. In anticipation of a possible intervention in the Great Lakes region of Africa, this section conducted hot planning on the politico-military level at the end of last year and provided military advice to the Permanent Council on possible options. This advice was developed by liaison officers who visited U.N. headquarters in New York, the Multinational Force (MNF) planning team in Stuttgart, and MNF headquarters in Kampala. Lessons also have been developed from three small WEU operations in the former Yugoslavia concluded last year: the Danube sanctions operation with Bulgaria, Hungary, and Romania; the joint Adriatic sanctions operation with NATO; and the Mostar police operation in support of the local EU commis-

French marines.

U.S. Marine Combat Camera (S.M. Andrews)

sioner. The section also has monitored both Implementation Force (IFOR) and Stabilization Force (SFOR) operations.

This section of the cell conducted a politico-military fact-finding mission to Africa last year, visiting the Organization of African Unity and four countries to determine ways that Europe can help enhance the peacekeeping capability of key troop-contributing nations in Africa. A database was created to identify available training in Europe. Other databases also have been set up, for instance on joint use of training facilities by WEU nations and training in land mine clearance. A council-approved exercise policy has been developed in consultation with NATO planners and is based on a three-year rolling program.

over the past 18 months generic plans for all Petersberg tasks have been completed

CRISEX, the first major WEU exercise, tested crisis management on the politico-military level. The first phase in December 1995 created exercise interplay between the Permanent Council, its subsidiary bodies, and the capitals of the participating nations. Phase II in June 1996 involved a similar exercise but added an operational commander and headquarters. The third was the same but with a force commander, Eurocorps headquarters at Strasbourg. Thus by the end of the year all levels of WEU had been tested in a combined crisis management, command post, and live exercise. In March 1997 a post-exercise seminar in Brussels examined lessons from CRISEX.

Plans Section. Over the past 18 months generic plans for all Petersberg tasks have been completed. These plans include evacuation, humanitarian and disaster relief, peacekeeping, and crisis management operations. Phase 1 of CRISEX practiced the transition of a generic plan into a contingency plan for a specific scenario utilized by the Permanent Council to prepare directives for selected operational commanders. Under the WEU system, operational commanders and staffs, not the planning cell, carry out detailed planning. This occurred during phase 2 of CRISEX when the commander presented an outline plan to the Permanent Council for approval. In August 1996, generic plans were developed in some 20 illustrative profiles, with an evaluation of each in order to determine what NATO assets and capabilities might be required. The Permanent Council selected six to be submitted to the NATO Joint Planning Staff for assessment.

With regard to defense planning, the cell has been analyzing the returns submitted in 1996 by WEU nations of headquarters and units available for Petersberg-type operations. The database currently lists some 2,000 such units from 24 nations, including associate partners and observers. These are mainly national assets, but the five multinational formations are included and MOUs have been signed with each of them. The potential joint operation headquarters are being assessed and discussions are under way with NATO on how WEU requirements can be included in its defense planning process for non-article 5 tasks at the higher end of the Petersberg spectrum.

The military aspects of WEU operational development are progressing well and will contribute to a stronger European capability to undertake Petersberg tasks. The WEU role as a bridge between the Alliance and the European Union is strengthening. After all, WEU is the only institution in which Europeans can discuss the full range of security and defense issues among themselves. However, the organization is still small and must develop much further before it can take on more substantive tasks such as the replacement of SFOR in Bosnia. In particular it must test the viability of using NATO assets in a major exercise. To send it into an enforcement-type action prematurely would clearly be a bold and risky decision. JFQ

55th Signal Company, Combat Camera (Brian Gavin)

U.S. Air Force (Lisa Zunanyika-Carpenter)

Planning a European-Led Force

By JOHN HILLEN

The decision by the President to commit over 35,000 U.S. troops to backstop the Dayton peace agreement in autumn 1995 was remarkable given the domestic controversy over the mission and the sad history of intervention in the Balkans in the past. Nonetheless, American leadership of the NATO Implementation Force (IFOR) was key to both the deployment during 1996 and keeping a tight lid on further military action by the various factions in Bosnia.

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However, eighteen months on, NATO is still firmly mired in Bosnia with no end in sight. Moreover, despite numerous pronouncements from Secretary of Defense William Cohen about an imminent U.S. exit in 1998, there are no plans, political or military, for making the transition from the U.S.-led Stabilization Force (SFOR) to a European-led peacekeeping force (EFOR). Although a conversion to a predominantly European force is broadly supported by both parties in Congress, American allies in Europe have clearly communicated their reluctance to take the lead.

The need for the United States to plan for a hand-off to a European-led

force is manifested on two levels. On the micro level, the situation in Bosnia underscores the fact that while a general peace has been maintained under both IFOR and SFOR, there is little evidence that it is sustainable without the continued presence of a robust international force. On the macro level, the strain on an ever shrinking and globally engaged U.S. military demands a smaller commitment by Washington to a regional security mission such as continued peacekeeping in Bosnia. Moreover, the growing differences in security interests and military capabilities between the United States and its European allies suggest a better division of labor between a global superpower and its partners.

it is likely that SFOR and succeeding forces will settle into a Cyprus-type peacekeeping mission

If, as Secretary Cohen said during his confirmation hearing, America should send "a signal and strong message to our European friends [that] we are not going to be there . . . that it's time for them to assume responsibility [in Bosnia] . . . and that we are not going to make an unlimited commitment to that region," then EFOR planning should begin now. It is certainly in the realm of the possible, and developments such as the NATO combined joint task force (CJTF) were intended precisely for this sort of contingency. To not undertake planning on the political and military level not only denies the realities of Bosnia but flies in the face of several geopolitical and security trends that make changing the balance of responsibility in all future Bosnias a U.S. strategic necessity.

Bosnia 1997

IFOR was a military success in that it prevented the resumption of a destructive conflict but a political failure in that it did not pave the way for the multi-ethnic Bosnia envisaged by the Dayton accords. This is rooted in the fact that the political and military provisions of the agreement always worked at cross purposes. The IFOR mission was to separate Serb, Croat, and Muslim forces while the political goal of Dayton was to unify Bosnia into a multi-ethnic state with shared political, economic, and judiciary institutions. These goals were irreconcilable unless IFOR acted to forcibly promote unification—such as stringently enforcing the right of refugees to return to their homes.

Instead IFOR, mindful of the "mission creep" that beset operations in Somalia, sensibly stuck to an achievable military goal—keeping various factions apart by imposing a zone of separation. In addition, undertaking a controversial mission in an election year meant that self-preservation and casualty-avoidance were of concern to U.S. strategists. This resulted in a passive and risk-averse strategy that earned U.S. forces in IFOR the nickname of "the turtles" for their emphasis on force protection and unwillingness to take chances.

U.S. forces suffered only one death from hostile incidents, but their operations left IFOR well short of the political conditions that could bring about the administration's oft-stated goal of a December 20, 1996 exit date. Indeed, the elections of September 1996, in which over 80 percent of Bosnians voted in solid ethnic blocs and few refugees crossed lines to cast votes in their pre-war districts, merely confirmed the de facto victory of separation over unification. By claiming with ballots what they had fought for with bullets, Bosnians effectively killed the Dayton accords, or at best kicked the can down the road for the SFOR political component to resolve in 1997 or 1998.

Under these circumstances, it was self-evident that the international community would have to maintain a presence in some strength in Bosnia. SFOR was envisaged as a smaller IFOR with the same basic mission: to keep the sides from renewed fighting while fostering a climate of peace and stability conducive to reunification. Given the elusiveness of that goal, which seemingly has far more support from outsiders than Bosnians, it is more likely that SFOR and succeeding forces will settle into a Cyprus-type peacekeeping mission. By the end of the SFOR mission in 1998, the outside world may decide that it is worth an international effort to keep peace in Bosnia for years to come even if this means supporting de facto separation. If that is the outcome, the unique and decisive role played by the United States over the last few years must come to an end. If Bosnia is to be a ward of the international community, then Secretary Cohen's statement about who should take responsibility for heavy lifting in a protracted peace operation should be put into action.

The U.S. Role

On the macro level, there are even more compelling reasons for rethinking U.S. leadership in Bosnia over the past two years. In particular, the confluence of several geopolitical and security trends demands a reappraisal of the role of the United States in regional alliances and the "one-size-fits-all" approach to calling on NATO as the solution to every European security dilemma.

The first trend, the strategic strain on the Armed Forces, was stressed by Secretary Cohen during his first week at the Pentagon when he indicated that the demand for American involvement far exceeds our resources. In fact, in attempts to close the supply-demand gap, the military—almost 40 percent smaller than in 1991—is operating at its most frenetic pace since Vietnam. The services routinely exceed targeted and budgeted operational tempos, especially in frequently deployed units. As a result, exercises have been scaled back, combat readiness has suffered in many units, and problems with morale, quality of life, recruitment, and retention are on the rise.

The procurement account, down some 70 percent the past decade, has yet to rebound from what the Congressional Budget Office terms a "procurement holiday." The FY98 budget shows, despite a long-promised increase, a decline in procurement dollars for the fourth consecutive year. Operations in Bosnia, originally estimated to cost $1–2 billion in autumn

Italian army Leopard 1 tanks.

U.S. Air Force

1995, are now forecast to exceed $6 billion through FY98, forcing the Pentagon to defer maintenance, change or cut training, and fleece the budget for operations and maintenance funds. Meantime, assets like quarter-century old C–130s fly in and out of Bosnia at twice their normal rate while replacements are pushed farther back in the procurement pipeline. Protracted operations such as Bosnia prevent the services from recapitalizing for eventualities that may have greater defense consequences than peacekeeping.

The second trend that militates in favor of reduced commitment to a prolonged operation in Bosnia is the evolving divergence in military competencies between America and Europe. For the most part, the United States is becoming the only allied power that can organize or lead significant combat operations. This predominance has come about principally because of the stringent fiscal standards that European Union nations must meet to be eligible for monetary integration. Since only Ireland and Luxembourg currently meet those standards, our chief NATO allies have been busy cutting defense since the Cold War by an average of 35 percent. European R&D accounts are half the percentage of that in the U.S. defense budget; and even procurement funds are more scarce in Europe than the starved recapitalization dollars in the U.S. budget. More importantly, European cuts are most keenly felt in critical areas such as power projection and sustainable combat power.

This pattern of European defense spending over the last six years has left the United States the only NATO member with such capabilities as large aircraft carriers, long-range strike aircraft, fielded stealth technology, space-based C^4I satellites and sensors, advanced aerial surveillance and reconnaissance systems, global lift, strategic logistics assets, and advanced weaponry based on the nascent revolution in military affairs. In Bosnia, 46 of 48 satellites which have been used by IFOR and SFOR for C^4I functions belonged to the United States.

Moreover, doctrinal and organizational shifts in emphasis among allies are profound—from larger forces for territorial defense and combat operations to much smaller forces for peacekeeping and military operations other than war (MOOTW). As the Canadian defense minister recently said, "I am a peacekeeper, not a warrior" (Canada

has only 21,500 active members in its land forces). This new military reality leaves the United States increasingly alone in the ability to form and direct a Desert Storm type operation—a warfighting enterprise in which it provided 70 percent of ground troops, 76 percent of combat aircraft, two out of three warships, all six aircraft carriers, and over 90 percent of the advanced C4I and support systems. Despite talk of a growing European defense identity, this imbalance seems likely to become even more tilted in America's favor.

Instead of bemoaning divergence in military competencies between itself and its European allies, the United States should take advantage of this evolution. If the overall effect of an alliance is intended to be more than the sum of its parts, then it makes sense that the roles and responsibilities of differing members should be matched to their capabilities and interests. Thus rendering to the peacekeepers what is theirs and to the warfighters what is theirs not only reflects a shift in military capabilities but a third geopolitical trend. National interests today are achieved very differently even among close allies and thus inspire very different levels of will and sacrifice. Unlike the Soviet threat that provided a centripetal force to hold NATO together, Bosnia never inspired an "all for one and one for all" call for action from members.

lesser threats like a Bosnia affect the interests of alliance partners very differently

Lesser security threats like a Bosnia affect the interests of alliance partners very differently. While Saddam Hussein's 1990 invasion of Kuwait proved threatening enough to temporarily unify a disparate 31-member coalition, his September 1996 actions against the Kurds did not. In fact, the U.S. cruise missile response of last year only found support from Britain and Germany and was condemned or not supported by Turkey, France, and Saudi Arabia. This is natural in a world of diverse threats and should be exploited by encouraging those with the greatest interest to assume the lion's share of intervention burdens. To pretend that a heavily enforced peace in Bosnia for ten or twenty years is as much in the interest of America as Europe is fatuous. The United States is involved in European security as the leader of NATO to protect its immutable vital interests on that continent—to prevent Europe from being dominated by a hostile power or bloc. America should serve as a balancer and defender of last resort in Europe—not a gendarme for its ethnic squabbles.

However, the United States became indefinitely committed to Bosnia through a circuitous logic that exposed the lack of flexibility in NATO and European security architecture: Bosnia is a European security problem, NATO is Europe's only credible military organ, the United States is the leader of NATO, thus it must lead the Bosnian mission. This approach makes no distinction between threats large or small, interests vital or non-essential, or strategic responsibilities local or global. Despite profound changes in Europe's economic, political, and military circumstances, its security architecture seems stuck on Cold War autopilot. For instance, at the onset of the recent Albanian crisis, the Italian press commented little on what Italy and other G-7 European powers should do. Instead, editorial writers chastised the United States and Russia for failing to show any initiative. One-size-fits-all strategies may have worked for Europe over the last fifty years, but the many calls for a reappraisal of the U.S. role in Bosnia point to the need for a more flexible approach—what British racing enthusiasts might call "horses for courses"—in the post-Cold War era.

Exit Strategy—CJTF and EFOR

If America is to alleviate strategic strain, concentrate on the global security tasks only its forces can accomplish, and ensure that its European sacrifices reflect national interests and military capabilities in the post-Cold War era, then it must press for a new bargain in Bosnia. Specifically, the United States must begin planning for a transition to EFOR in 1998, a European-led force that could operate with limited but critical U.S. support. Given the unlikely prospect of a short-term solution in Bosnia and finite U.S. patience for an extended American presence, handing off Bosnia to a credible European force with the forbearance and resolve to see the task through would be the most sustainable and achievable goal for a superpower.

The vehicle for this transition can be found in the NATO combined joint task force (CJTF). A U.S. initiative, the concept was conceived in 1993 and after much negotiation was approved in June 1996. CJTF will allow for a mix and match of "separable but not separate" NATO units that can be led by either an American or European commander, a force structure dominated by either the United States or Europe, or even a smaller CJTF put together under the auspices of a reinforced Western European Union (WEU) or Organization for Security and Cooperation in Europe (OSCE). The U.S. ambassador to NATO, Robert Hunter, has called CJTF "the first significant change in the way the Alliance does business since 1966." This is because the concept introduces the sort of operational flexibility NATO will need to address a range of post-Cold War security problems in Europe—a flexibility that can accurately reflect both national interest and military capability in each member country's strategic responsibilities. Moreover, a functioning CJTF will have the practical effect of stiffening the political resolve of Europeans in their ability to handle small crisis management, humanitarian relief, and peace operations in the region (such as the Albanian mission).

To create EFOR, CJTF must be taken off the drawing board and put into practice instead of atrophying in a planning cell at Mons (EFOR evolution is represented in the accompanying figure). IFOR and SFOR have been CJTFs in all but name. The move to EFOR will require a change in the American role from leader and dominant partner to supporting player with unique and decisive capabilities. EFOR might well be much smaller than SFOR and backstopped by the United States

Spanish navy AV–8S Matador.

U.S. Navy (John Leenhouts)

in areas such as Civil Affairs, intelligence, logistics, air and sea support, communications, and transport. Given the embryonic state of European security and defense identity and the condition of organizations like WEU and OSCE, the first iteration of EFOR will have to be "stood-up" under the aegis of NATO. However, it is possible that OSCE and WEU could mature to a point at which they could field a small Bosnian peacekeeping mission in the future, thereby releasing NATO from a burden that should have only been temporary duty for a U.S.-led alliance of collective defense.

the first iteration of EFOR will have to be "stood-up" under the aegis of NATO

Bosnia has shown that post-Cold War Europe needs a variety of institutional alternatives for a range of security issues. The imperatives are that institutions should complement each other, overlap in responsibility, and above all accurately reflect the different interests and capabilities of each member. For the United States this means an enduring interest in ensuring that Europe is not dominated by a hostile power or bloc—even if the threat is not immediate. A U.S.-led NATO focused on collective defense and deterrence is the best insurance against such a threat. Attempting to turn the American role in NATO into a long-term commitment to peace operations in Bosnia has exposed the foible of trying to insert a square peg in a round hole.

Instead, the United States must, through mechanisms like CJTF, encourage development of round pegs like WEU and OSCE through which prosperous partners can take the lead in smaller collective security missions. If the United States does not offer strong leadership in this enterprise, then Europeans will be content to depend on a U.S.-led NATO response for every security issue that arises on the continent. Eventually the American people will become disillusioned with a security role that does not accurately reflect post-Cold War interests and capabilities of the United States or its partners. Already, many voices on both the left and right have called for a total end to the American commitment to European security.

Reappraisals of the U.S. role in European security often evoke panicky responses at home and abroad. However, this reaction tends to make American leadership not a means but an end. If the situation in Europe is so inflexible that it precludes development of a supporting security system—and holds America permanently responsible for peacekeeping in Europe—then this proposition should be reexamined. Supporting efforts by regional allies can free those farther up the security hierarchy for problems that only they have the power to solve.[1]

European allies cannot replace the United States in the larger tasks of regional or global security. Moreover, these allies are allowing their capabilities to support such endeavors to decrease. It therefore is incumbent on the United States and its partners to build a credible supporting system for any future Bosnias. Planning for a transition to EFOR should start taking advantage of divergent interests and capabilities and foster a wider sense of responsibility for security affairs. Such a system would not be built to shirk international responsibilities but create means to complement the unique and demanding U.S. role of deterring major conflicts in Europe and other parts of the globe. JFQ

Evolution of Bosnia Force

IFOR (1996)
- 53,000 troop U.S.-led NATO task force
- 16,000 U.S. troops in Bosnia
- 15–18,000 U.S. troops supporting in Hungary/Croatia/Italy/Adriatic Sea

SFOR (1997–98)
- 31,000 troop U.S.-led NATO task force
- 8,500 U.S. troops in Bosnia
- 10–15,000 U.S. troops supporting

EFOR (1998–?)
- 12,000 troop European-led CJTF
- <1,000 U.S. troops in Bosnia
- <4,000 U.S. troops supporting

NOTES

[1] See John Hillen, "Superpowers Don't Do Windows," *Orbis,* vol. 41, no. 2 (Spring 1997), pp. 241–57.

USS Arkansas.

U.S. Navy (David Blencoe)

The Looming Alliance Debate over Nuclear Weapons

By JACQUELYN K. DAVIS, CHARLES M. PERRY, *and* ANDREW C. WINNER

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In talks with Russia on the expansion of the North Atlantic Treaty Organization (NATO) and in Alliance debates on restructuring, members have endeavored to keep the question of nuclear weapons off the table. Thus far they have done that by devising a "three no's" policy, stipulating that NATO has no intention, no plan, and no reason to deploy such weapons on the territory of any new member either now or in the future.[1] Based on an American initiative, the Allies adopted this policy for a number

of fairly sensible but largely tactical motives. For one, the United States and some of its European NATO allies did not want the politically volatile question of the forward stationing of nuclear weapons or delivery systems to bog down the expansion initiative. In addition, with under 500 U.S. nuclear weapons in Europe and Russian efforts to either limit or eliminate NATO nuclear forces during previous negotiations, Alliance officials probably feared that formal negotiations on tactical nuclear systems in the context of NATO enlargement could lead to a "third zero" in Europe[2]—elimination of Alliance dual-capable aircraft (DCA) and stocks of their nuclear bombs in NATO vaults in several member countries. Moreover, given the vast difference in the sizes of Russian and NATO stockpiles, the Alliance would be at a distinct disadvantage in the bargaining that any substrategic negotiations would likely entail.

the probability of an agreement on deployment limits for tactical systems is considerable

With the demise of the Soviet Union and dissolution of the Warsaw Pact, the utility of the remaining NATO forward-based tactical nuclear weapons could be challenged by a disparate group of anti-nuclear, pacifist, and environmental activists and exploited by Moscow in the debate over NATO expansion—or so many Alliance officials thought. In an attempt to eliminate any prospect of debate, which promises to be contentious, Alliance officials devised the three no's policy while holding to the line that the peacetime role of nuclear weapons in NATO planning remains essential for Alliance cohesion. From this perspective, if the size or composition of the NATO nuclear force is going to be changed it should only be in the context of adopting a new or revised strategic concept or, if pressed, through far-ranging discussions with Russia to address more than nuclear issues. If the Alliance re-opened the substrategic issue in the midst of discussions on expansion and internal adaptation, the process might be debilitating for both Alliance cohesion and institutional credibility. The last "new strategic concept" was debated by NATO for nearly two years.

Yet while the decision to skirt the issue of nuclear weapons was tactically astute, the reality is that many factors make it unlikely that Alliance members can avoid a more explicit discussion of the fundamental question of nuclear deterrence and its place in NATO strategy for much longer. At some point, moreover, this should include developing a mechanism for preparing new members to participate effectively in the Alliance nuclear planning process.

START and Tactical Systems

There is every indication that the United States and Russia are accelerating the arms control process by developing a framework for START III reductions, measures to induce the Russian Duma to ratify START II, and agreement on demarcation issues related to missile defense research, development, and deployment. Expedited discussions on significantly reducing strategic nuclear stockpiles under a START III rubric is likely to pressure NATO to think more concisely about how nuclear weapons fit into its plans for the next century. On March 21, 1997, at the Helsinki summit, Presidents Clinton and Yeltsin agreed that after START II enters into force the United States and Russia will begin negotiations on a START III agreement to lower the ceilings of strategic nuclear inventories to somewhere between 2,000–2,500 warheads. They also agreed to enhance the transparency of their nuclear inventories and, for the first time, to include a provision on the actual destruction of strategic nuclear warheads to promote irreversibility in the cuts. Perhaps most important in terms of extended deterrence, or the U.S. nuclear guarantee to protect NATO Europe, was the agreement that, in the context of START III, Washington and Moscow would explore as separate issues the possibility of added controls on nuclear long-range sea-launched cruise missiles and tactical nuclear systems, to include confidence-building and transparency measures.[3] Although the exact nature of such measures was not stated, some have suggested that prospective transparency measures might involve broader exposure by Russia to NATO vault safety and security procedures as well as mutual visits to stockpile sites in the hope of bringing the Russians closer to meeting NATO standards.

In any event, the Helsinki agreements clearly reflect the intentions of both Presidents to put START III on the fast track, and this could have profound implications for nuclear force structure in NATO, particularly for U.S.-provided weapons stockpiled in Europe. The wording of the joint statement on these issues is ambiguous in places and, as usual, covers over some key differences of approach between the sides. On the one hand, the United States wants any measures relating to nuclear long-range sea-launched cruise missiles and tactical nuclear systems limited to confidence-building and transparency measures. Russia, just as clearly, wanted the statement to allow for the exploration of possible reductions or operational constraints on these systems; for example, limits on deployment locations or range capabilities. Which side succeeds at the bargaining table has yet to be determined, but it is possible that limitations on numbers or deployment modalities of tactical nuclear weapons in Europe could be negotiated in the near future with obvious implications for the NATO strategic concept and nuclear risk-sharing in the Alliance. Hence, while maintaining a low-profile policy with regard to substrategic forces, the Alliance nevertheless needs to quietly consider its options lest it be caught off guard.

The probability of an agreement on deployment limits for tactical systems is considerable, in part since it is not only Russia that is interested in applying some sort of arms control measures to NATO tactical nuclear weapons. The United States and its partners have an obvious stake in seeing the large stock of Russian tactical nuclear weapons—by some estimates over

Bombers destroyed under START I.

DOD (R.D. Ward)

10,000—reduced or put under strict transparency and control regimes for two reasons.[4] First, it is generally thought that central Russian government control over these weapons is much more tenuous than over strategic systems. The United States and its allies would like to increase that control and, at the same time, enhance their information on these systems to decrease chances of nuclear materials being stolen by or diverted to pariah states or used by some rogue actor.

Second, NATO members are aware that stability in Russia is tenuous, with the military less and less satisfied by their status in the country's fragile democratic development. In this context, and against the disastrous outcome of the Russian foray into Chechnya, NATO officials are all the more concerned over Moscow's apparent adoption of the old NATO doctrine of flexible response. Many Europeans believe that renewed Russian interest in reliance upon nuclear weapons to offset conventional inferiorities, with modernization programs to match, must be redirected if stability is to be maintained on the Continent.

Thirdly, since it is the 10,000-odd Russian tactical nuclear weapons that pose a special threat to NATO European states—given the ranges associated with their likely delivery systems—it stands to reason that U.S. allies would seek other avenues to reduce the Russian inventory of substrategic warheads and render those that remain more safe and secure. The Netherlands, for example, has proposed initiating some sort of Nunn-Lugar program targeted specifically on assisting Russia in the secure containment and dismantling of warheads on theater and intermediate-range missiles.

But precisely how efforts to redirect Moscow's increasing reliance on nuclear weapons ought to proceed—under the rubric of a START III agreement, perhaps in conjunction with revision of the Conventional Forces in Europe Treaty or as part of less formal transparency talks—is open to debate. Equally uncertain is how the European members of NATO would view tradeoffs that would increase the transparency of Russian tactical nuclear forces or cut their number versus a requirement for the Alliance to reduce further or restrict the deployment of its own greatly diminished nuclear capability. Nevertheless, pressure does exist to support just this type of arms control initiative toward Russia, and it is likely to grow. Such pressure, moreover, could prove irresistible to Alliance members when presented as part of a package of incentives to ease Russian objections to NATO expansion and/or reconfigure the Alliance—both structurally and with regard to core missions—in ways that Moscow would find less threatening.

Waning Asset?

The European view of these tradeoffs may well depend on whether government officials are wearing their strategic hats or green eyeshades. Budget cuts and force restructuring in virtually every allied nation raise the question of whether a continuing nuclear role is feasible for countries with dual-capable certified squadrons, particularly Belgium, Italy, and Greece. Each faces difficult military modernization choices with little stomach for increased defense spending as it attempts to meet stringent monetary criteria for entry into the European Monetary Union. Converting nuclear-tasked squadrons into truly effective conventional assets (for example, based on stand-off missiles) might prove more costly than maintaining current nuclear assignments. However, this fact is not likely to dampen incentives to shed the nuclear role in an effort to reduce military expenditures. Even in more prosperous DCA-deploying countries, including Germany, anti-nuclear sentiments combined with a desire to assuage Russian concerns over NATO expansion could erode government support for continued participation in this aspect of Alliance defense cooperation.

Most European NATO members regard DCA as a necessary evil, perceiving that deterrence is existential and thus rather immune to the number of systems or specific deployment modalities. Yet even with sizable anti-nuclear minorities in their countries, governments tend to accept Alliance substrategic capabilities as crucial to the theory of deterrence and, more importantly, to the political cohesion of the Alliance. Viewed from this position, the sense of shared risks and responsibilities embodied in NATO planning, both in the conventional and nuclear realms, is basic to maintaining consensus on many strategic issues. That said, for many in Europe the deployment of Alliance nuclear weapons is not sacrosanct, as attested by the British decision to dismantle DCA assets in favor of deploying a substrategic Trident—a decision based on both the longer range and enhanced precision of submarine-launched ballistic missile platforms that give them the capability to target a

F/A–18E conducting in-flight tests.

McDonnell Douglas (Kevin Flynn)

Su–27 on flight deck of *Admiral Kuznetsov*.

U.S. Navy (Todd Summerlin)

wider array of aimpoints in any number of potential adversary countries.

However, this decision by the United Kingdom to opt out of DCA taskings—a transition that should be complete by the end of 1998—may reignite similar debates in other DCA-deploying countries, particularly those in which air force structures are proving unable to cope with the general decline in defense budgets. Of course only the British have the option of substituting one mode of platform deployment for another. A decision by any other member for a submarine-launched capability would require transferring sensitive technology from the United States, Great Britain, or France and would be more expensive for the DCA-deploying nations. But apart from platform changes these countries might choose to keep fewer aircraft—perhaps one rather than two squadrons—at a high state of readiness for a nuclear mission. Alternatively, support may grow for a consolidated multinational DCA wing, though this option might require basing individual national contributions at a single site, thus increasing vulnerability and restricting flexibility.

And yet, with no decision to modernize the NATO nuclear arsenal on the horizon, Alliance DCA platforms will become waning assets over time by sheer obsolescence. Meanwhile, barring any negotiation that would reduce the current stockpile, more than one DCA-deploying nation can be expected to do everything possible to retain this mission (albeit at a reduced level of readiness) since it justifies force structure which otherwise would be cut from active inventories. For this reason alone, there will be mixed feelings on a debate over the future of NATO substrategic forces, even though there are powerful rationales for doing so.

The Promise of RMA

Aside from arms control and Alliance cohesion, there are doctrinal and technological issues that may persuade NATO to take a new look at nuclear weapons and how they fit into its deterrence posture. Some advocates of the so-called revolution in military affairs (RMA) argue, for example, that the relevance of nuclear systems and traditional concepts of deterrence more generally has been eroded in the wake of qualitative advances in conventional capabilities. These new generation nonnuclear technologies may, when

weaponized, provide a more credible basis for deterrence against regional adversaries than using the nuclear threat as a crisis management instrument. Proponents of this view claim that the central issue is nuclear credibility in a world in which public sensitivity to casualties is high and compellance and/or denial can be accomplished for the most part by non-nuclear means. From this perspective, it is not so much the concept of deterrence that needs to be overhauled as its one-dimensional association with nuclear weapons, which is seen as destabilizing and, in the case of Russian deployments, subject to questionable command and control procedures and technology. Those who hold this position will argue that NATO can afford to shrink its nuclear force structure even further and should readjust its strategic concept to allow for a broader view of deterrence which includes advanced conventional weapons and new operational concepts.

France would argue vehemently against any minimization of nuclear deterrence

Notwithstanding their growing awareness that new and emerging non-nuclear technologies offer great potential for deterrence and defense planning, European elites also believe that nuclear weapons still count in tackling certain prospective risks, from the proliferation of weapons of mass destruction (WMD) to the revival of a coherent Russian threat. The ambiguity of a response related to nuclear deterrence in an existential mode, which is partly rooted in the Alliance's refusal to adopt a sweeping "no first use" pledge and in support for a declaratory policy on nuclear weapons use in extreme circumstances, gives non-nuclear NATO members a sense of security that is unattainable from conventional weapons alone. And even if advanced conventional weapons were woven into the NATO deterrence concept, key issues about their availability in crisis—and by extension their credibility as deterrence assets—might remain unresolved, as it may be only the United States that chooses to spend the money to field advanced non-nuclear systems.

France and NATO

Of course one Alliance member, France, would argue vehemently against any minimization of the role of nuclear weapons in deterrence. At present France's view of Alliance nuclear policy is more academic, given the limited status of its membership. However, with its leading role in Europe and its close partnership with Germany in particular, France entertains ideas which cannot be dismissed out of hand. If anything, French perspectives on nuclear weapons and concepts of deterrence are being more widely heeded since the strategic situation on the Continent has changed and continuing U.S. engagement is perceived to be more tenuous than during the height of Cold War tensions—a time, it is worth remembering, when many Europeans feared the United States would never really "trade New York for Hamburg."

Notable in this regard is the French initiative to engage the British more intensively in talks on cooperative deterrence and President Chirac's efforts to include Germany in his nation's concerted deterrence concept. At their Nuremberg summit in December 1996, Chirac and Chancellor Kohl of Germany signed a "common strategic concept" which includes provisions for reassessing the role of nuclear deterrence in European security planning.[5] Playing on European fears of an erosion in the transatlantic security link, particularly if Alliance expansion dilutes the capacity for concerted action by NATO as expected by some, the French are promoting the notion of a "concerted deterrence" as central to an independent European security and defense identity (ESDI)—one that could become more directly tied to the European Union than to NATO.

Counterproliferation Policy

A final factor that may cause NATO to reexamine how nuclear weapons fit into its security strategy is the growing WMD threat, particularly from states on the southern and eastern littorals of the Mediterranean. Libya, Syria, and other states are upgrading the range of their missiles and will soon be able to strike Europe, perhaps even with chemical and biological weapons. NATO has considered counterproliferation and nonproliferation for years—mostly prompted by the United States but also with support from the southern tier, notably France, Italy, and Spain. But recent discussions—largely through the Senior Defense Group on Proliferation—have focused on passive and active defenses, with the adoption of a military operational requirements document circulated by Supreme Headquarters Allied Powers Europe (SHAPE) on counterproliferation that has since become mired in national politics, budgetary issues, and most recently the debate over NATO expansion.

Preliminary reviews by the NATO Nuclear Planning Group notwithstanding, the issue of how nuclear weapons fit into the Alliance counterproliferation calculus has not been fully addressed. SHAPE has included nuclear deterrence assets as one leg of its new counterproliferation triad—the other two being theater missile defense and conventional attack—but there has been little talk of their relative value in various WMD settings or of new operational concepts to render the deterrent leg credible in the future. Moreover, whatever SHAPE and NATO headquarters think, countries such as Italy—which is key to Southern Region perspectives—may be of two minds. On the one hand, the presence of U.S. nuclear weapons and bases on Italian soil could proffer targets for possible attacks by an adversary like Libya.[6] On the other, the continuing presence of these weapons as part of the NATO European-based force structure could provide a degree of security that would be difficult to replicate otherwise, given the uncertainty surrounding conditions under which such weapons would be used. Beyond security-minded anxieties, Italy, like other smaller countries, sees participation in the DCA posture of NATO as essential to retaining its seat at the table in important Alliance deliberations. To forfeit a role in DCA planning and execution could relegate Rome to second-tier status in NATO circles according to this view.

Breaking down submarine in Severodvinsk, Russia.

U.S. Navy (Todd P. Cichonowitz)

Indeed, in the wake of substrategic-level consultations in Helsinki and among larger NATO powers (for example, France, Britain, and Germany), smaller DCA-deploying countries are likely to increasingly press for a voice as occurred when the infamous "quad"—the United States, Britain, Germany, and SHAPE—was said to be exerting undue sway over NATO nuclear policies. Dutch officials have argued, for example, that there is little value in working hard to retain the "special weight" that DCA participation is presumed to confer if it only comes to bear in the unlikely instance of consultation on actual nuclear use. Instead, it is peacetime deliberation on substrategic forces—including deterring a potential use of WMD against NATO's Southern Region and the contours of future arms control and transparency talks—that matters most, many argue, now that the prospect of a nuclear exchange at the theater level has receded. If such sentiments are not fully appreciated by the larger NATO states, holding the line against a future "third zero" will become all the more difficult.

NATO Nuclear Posture

The above factors point to a need for NATO to reconsider its nuclear deterrence posture and strategy. However, as noted the Alliance is currently overwhelmed by the politics of both internal adaptation and expansion, and NATO as an organization is very adept at avoiding discussions on issues that appear logically necessary to outsiders. It may be able to hold off this discussion for two to three years, depending on whether the U.S.-Russian arms control agenda moves forward or if the United States undertakes any significant unilateral initiatives related to its national nuclear deterrence strategy or its force structure—either conventional or nuclear—in Europe.

The prospect that the United States might make some sort of largely unilateral adjustment in its European force posture that could have an impact on NATO deterrence thinking cannot be ruled out. Both deterrence and nuclear forces were examined in the Quadrennial Defense Review (QDR) and will be assessed by the National Defense Panel (NDP), which follows an earlier nuclear posture review that was conducted parallel to the Bottom-Up Review and left untouched DCA deployments in Europe. In terms of conventional capabilities, the QDR report contains modest cuts in end strength and infrastructure in order to adequately fund readiness and modernization. Depending on the outcome of the NDP report and congressional deliberations, other cuts such as reductions in dual-capable air assets or infrastructure to support the nuclear mission remain a possibility. However, changes in tactical nuclear forces may not drive a broad-based Alliance review of its deterrence posture.

So too, U.S. changes in nuclear strategy cannot be ruled out as the Nation contemplates its deterrent force under a START III regime of 2,000–2,500 strategic nuclear warheads that may also limit certain delivery platforms or deployment modalities. Whatever path we choose with regard to our nuclear arsenal and strategy, we must recognize that there will be consequences for European security, directly over NATO nuclear planning or indirectly in the context of broader moves toward a notion of ESDI that stands apart from NATO. In fact, the emergence of an independent European security identity centered around British and French national nuclear forces could be accelerated if there is a perception of significant erosion in the U.S. commitment. There is already growing concern in Europe that as America draws down its active force structure forward-based deployments will be further trimmed or eliminated, lending support to Allied concerns over U.S. disengagement.

Worse still from a European perspective is the likelihood that the United States, in efforts to develop an off-shore-based power projection force posture, would unilaterally withdraw its land-based air systems from Europe, forcing the Alliance to rely on off-shore assets for deterrence. The effective dismantling of the NATO land-based substrategic force structure in this manner would create a situation in which deterrence in Europe would thereafter be based essentially on American and British off-shore platforms and French nuclear forces, whose nuclear-tasked aircraft would be the only land-based nuclear assets in NATO Europe. Neither the substance nor symbolism of this new reality would be lost on NATO's non-nuclear partners—one or two of which might be moved to reconsider their own nuclear options—nor on potential global adversaries, more than one or two of

Slava-class guided missile cruiser *Marshal Ustinov*.

U.S. Navy

whom are known to be involved in concerted efforts to develop national WMD postures.

The psychology and politics of deterrence rest on extremely subjective factors, and there is little solid data on the precise role of nuclear weapons in deterring chemical or biological weapons use or affecting strategic calculations by non-Western leaders. Apart from a limited understanding of what occurred behind the scenes in Desert Storm with regard to deterrence calculus and intuitive efforts to develop a correlation between U.S.-Soviet Cold War experiences and hypothetical contingencies centered around 21st century threats, empirical data that either supports or contradicts various deterrence paradigms is inadequate to guide anything except the most general projections of deterrence planning. Yet there is to date no credible alternative to retaining effective nuclear assets. While there is certainly great attraction in embracing the conventional deterrence concept, for the Alliance this is really a nonstarter given the extent to which national forces are being reduced and the fact that resources are lacking to implement research and development programs needed to field non-nuclear technologies to influence national perceptions, particularly in crisis situations.

If NATO is to remain an effective alliance with a strategy that embraces a nuclear deterrent, it must address the various issues discussed above in a coherent manner before events in individual countries or negotiations which do not directly concern the Alliance dictate outcomes. At the end of the day, it takes the political will to tackle tough issues and reach a consensus—no matter how fragile—that has greater importance than any given weapons deployment or defense concept. The capacity of a group of sovereign democratic nations to come together to ensure stability, manage crises, and prevent crisis escalation is the core requirement of the new NATO. Hence the maturation process will require adoption of a new deterrence concept that embraces nuclear and non-nuclear options for deterrence and crisis management. When and how that discussion and evolution will take place has yet to be determined, but several trends suggest it should be sooner rather than later, lest we risk having some options foreclosed. More importantly, we also risk the effects that avoiding a timely debate could have on an enlarged Alliance. It will be important to show new members that NATO can step up to the plate and handle difficult questions such as nuclear deterrence in a way that preserves Alliance cohesion as well as the security of individual members. JFQ

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NOTES

[1] North Atlantic Council communiqué, December 10, 1996.

[2] The first two zeros resulted from the Intermediate Nuclear Forces Treaty (which entered into effect in 1988) that eliminated long-range (1,000–55,500 kilometers) and short-range (500–1,000 kilometers) intermediate nuclear forces from U.S. and Soviet inventories. Subsequently, President Bush tacitly agreed to a third zero of sorts—for missile systems under 500 kilometers in range—when he decided to forego modernization of the Lance missile system.

[3] President of the United States, "Joint Statement on Parameters of Future Reductions in Nuclear Forces" (Helsinki, Finland: Office of the Press Secretary, The White House, March 2, 1997).

[4] Robert S. Norris and William Arkin, "Estimated Russian Nuclear Stockpile, September 1994," *Bulletin of the Atomic Scientists*, vol. 50, no. 5 (September/October 1994), p. 61. More recent sources put the number of deployed tactical weapons at much lower levels—approximately 3,200—but the number of nondeployed but not yet dismantled weapons is unclear. See Robert S. Norris and William Arkin, "Estimated Russian Stockpile, September 1996," *Bulletin of the Atomic Scientists*, vol. 52, no. 5 (September/October 1996), pp. 23–28.

[5] The text of this agreement was reprinted in *Le Monde*, January 30, 1997, pp. 12–13.

[6] This was brought home in 1986 when Libya fired two Scud missiles at the Italian island of Lampedusa, in apparent retaliation for American raids on Tripoli in the wake of the bombing of La Belle Disco in Berlin.

Tu–160 bomber at Borispil airport.

DOD (R.D. Ward)

Ukraine as a Post-Cold War Military Power

By STEPHEN D. OLYNYK

Fifteen new independent entities were propelled by national security imperatives to create their own armed forces once the Soviet Union was dissolved. That process varied from state to state because of differences in interests and resources—ends and means. An instructive example is Ukraine, perhaps the most important of the emergent states after Russia. A country of 52 million people, the size of France, and rich in natural resources, it could be destined to play a central role in the new geopolitical environment of eastern and central Europe.

The speed of the Soviet Union's breakup left its forces practically intact where they were deployed. While Russia proper retained the second-rate forces that were previously part of the central strategic reserve, the former republics on the western frontier, especially Ukraine and Belarus, inherited first-class force packages which were part of the second strategic echelon of the former western and southwestern theaters of operation of the Warsaw Pact.

Each of the newly independent states has dealt differently with its military inheritance. On one extreme, the

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Baltic states insisted that all former Soviet forces leave their territory as they built their own from scratch. Russia and the central Asian states were slower to form national forces, with some of the latter still not having accomplished that thus far. At the other extreme, Ukraine decided to nationalize former Soviet forces stationed on its territory except for strategic forces. Over 700,000 ground, air, and air defense forces along with 500,000 paramilitary troops were based in Ukraine. Motivated by national (regional) patriotism and economic considerations, most remained and swore allegiance to the new state. Only 20,000 officers departed to Russia or other former republics.

Legal Basis

Having declared complete independence on August 24, 1991, two days after the collapse of the putsch in Moscow, the Supreme *Rada* (parliament) realized that there was no military to protect the new nation. With a brief decree Ukraine nationalized all conventional forces on its territory, the first former Soviet republic to do so. In the months that followed legislative acts provided a legal basis for the armed forces and created a rudimentary national security structure—with a ministry of defense, defense council, and national security council (the latter two were combined in 1995); the general staff of the armed forces of Ukraine; and three services. The laws also outlined a basic Ukrainian defense policy and the defense responsibilities and functions of various agencies and officials.

As approved by the Rada, the major tenets of military doctrine are preventing war, building the armed forces, and repelling aggression. Ukrainian security policy is defensive and based on nonintervention, respect for the national borders and independence of other states, and rejection of the use of force as an instrument of policy. This is in stark contrast to Russian doctrine, which anticipates intervention outside its borders under conditions of a peripheral conflict or protection of Russian minorities in neighboring states. Because of political sensitivity, military doctrine—like Ukrainian security policy—avoids identifying a specific threat. Rather it refers to a "state whose consistent policy presents a military threat . . . [or] leads to interference in the internal affairs of Ukraine, or encroaches on its territorial integrity and its national interests."

Military doctrine reemphasizes a statutory and political commitment to a non-nuclear status. It stresses the principle of "reasonable defense sufficiency" in determining the number and types of forces as well as the quantity and quality of conventional weapons. It puts a priority on developing modern, well-trained, and highly mobile forces with emphasis on precision weaponry, intelligence and electronic warfare, air and space defense, and airpower and seapower. To accomplish these objectives, this doctrine calls for a modern and economically rational defense industrial base.

In January 1997 the Rada adopted "The Concept of National Security of Ukraine," a policy and strategy that contains principles, national interests, unspecified threats, objectives, organization and functions, and the roles of government agencies in security policy formulation. This document is very general in tone and reflects the continuing ambiguities present in defining Ukraine's security interests, threats, and policy objectives.

The Soviet Legacy

Ukraine inherited only two services from the Soviet Union—an army and air force. Black Sea Fleet (BSF) assets remained under the de facto control of Moscow. On the ground, Ukraine gained control over five armies, one army corps, eighteen divisions (twelve motorized, four tank, and two airborne), three airborne brigades, three artillery divisions, and a host of combat support and combat service support units. It also inherited four air armies with assets that gave Ukraine the third largest air force in the world, including an inventory of long range

bombers, transports, strike aircraft, reconnaissance and electronic warfare planes, tactical and air defense fighters, and training aircraft. The air defense contingent consisted of one air defense army and three air corps. It was part of the air force but since has been made into a fourth service branch.

In autumn 1991 there was a Ukraine navy in name only, with the command and control structure being formed and negotiations just starting over the division of the Black Sea Fleet. But the new nation did inherit and get control of a substantial part of Soviet shipbuilding capacity as well as Black Sea shore naval facilities.

As for strategic forces, Ukraine became by default the world's third largest nuclear power, with 176 land-based ICBMs (1,240 warheads), 41 strategic nuclear bombers (460 warheads on bombs and cruise missiles), and tactical nuclear weapons; the latter were transferred to Russia in 1993.

After intensive negotiations by Ukraine, Russia, and the United States, and with the U.S. and Russian accession to three key Ukrainian demands (security guarantees after Ukraine becomes non-nuclear, financial assistance to dismantle missiles, and compensation for the missile material), a tripartite agreement was signed in January 1994 that provided for Ukraine to de-nuclearize itself within seven years. One month later parliament ratified the START I treaty and in November 1994 a new parliament overwhelmingly approved the Non-proliferation Treaty thereby underscoring the intent to become a non-nuclear state. By June 1996 Ukraine had transferred all strategic nuclear warheads to Russia, ahead of schedule. The bombers went to Russia in payment for outstanding debts. But the expensive destruction of missiles and silos and environmental cleanup (especially of liquid rocket propellants) had just begun. With the removal of the weapons, strategic forces were gradually reduced and resettled in housing provided with U.S. and German financial assistance.

Ukrainian and U.S. marines.

Vijysko Ukrainy

The State of Reform

There have been several attempts at military reform since the armed forces were organized. The first three ministers of defense have had a master plan, but each failed to have it implemented before leaving office because of a lack of funds and indecisiveness on the part of the defense leadership. What these plans had in common was a call for force reduction, defense industrial conversion, and force modernization. Each reform package proposed reorganizing administration and command, redeploying forces to adapt them to new military and geopolitical realities, reconfiguring the force structure, and reducing manpower and equipment to maintain "reasonable defense sufficiency" and meet the ceilings imposed by the Treaty on Conventional Armed Forces in Europe (CFE).

the only truly successful reform has been in the area of force reduction

The services. The only truly successful reform so far has been in the area of force reduction. In October 1993 the Rada approved an end strength of 450,000. This strength is currently 371,000—down from 726,000 in 1992. By July 1995 Ukraine met CFE limits in personnel and selected conventional weapons. Reformers reconfigured the old Soviet "army" structure of the ground forces into army corps as the highest echelon of command and control, and personnel have been reduced to 161,000—down from 245,000 in 1992. Plans are also underway to further shrink these ground forces to 95,000 by 2005.

The four Soviet air armies have been restructured into two aviation corps and one naval aviation group. Air force personnel are being reduced to 78,000 this year. Combat planes will be cut from 1,090 to 590 by 2005. The air defense forces, which have become a separate service, have been reorganized into three air defense corps with an anticipated strength of 36,000 by 2005—down from 67,000 in 1992.

Building a navy has been plagued for years by a tug of war between Ukraine and Russia over their shares of BSF and basing rights. Early on, the Russian command surreptitiously transferred some of the better ships to its Northern Fleet. After several summit meetings and agreements that were never implemented, Presidents Boris Yeltsin and Leonid Kuchma agreed at

Sochi in June 1995 to divide BSF in half; then Ukraine would give Russia 32 percent of its share as payment for debts and use the remainder either to refurbish its own nascent navy or sell it for scrap.

This agreement was solidified by the two presidents in a comprehensive treaty of cooperation between Russia and Ukraine signed on May 31, 1997 in Kiev. Under the terms of the treaty Russia formally recognized Sevastopol as an integral part of Ukrainian territory and Ukraine agreed to lease three bays at Sevastopol naval base to Russia for BSF use over the next twenty years. Ukraine will also have basing rights at a separate bay in the port for its navy. This development may have resolved what was a highly charged political issue in both countries.

The nucleus of an independent navy is being formed primarily around coastal defense ships built in Ukraine's shipyards and the BSF craft already under its operational command and control. Meantime, some of its new ships have been taking part in regional naval exercises with neighbors and selected NATO naval exercises under the Partnership for Peace (PFP) program. Finally, while Ukraine has taken over most BSF shore-based facilities, it is unable for the time being to allocate the resources necessary to sustain a substantial shipbuilding capability.

At the direction of the president, a plan known as the "State Program for the Building and Development of the Ukrainian Armed Forces for the Year 2005" was adopted in December 1996. It is the most serious reform to be attempted so far and covers roles and missions, force structure, budgeting, modernization, and the organization of the ministry of defense and general staff. Initial emphasis for 1997 is on upgrading the air force and navy and developing a "rapid reaction force" as the nucleus of Ukrainian defense posture—a fully manned, equipped, and ready contingent. Details of the program have not as yet been released.

Military districts. In 1992 the three former Soviet military districts in Ukraine (Carpathian, Odessa, and Kiev) were reorganized into two operational districts (Carpathian and Odessa) and one administrative (Central Command in Kiev). Odessa was extended to cover the southeastern length of the Ukrainian-Russian border, but for reasons of political sensitivity no separate district was established in eastern Ukraine to cover the length of its border with Russia. However, a limited number of restructured operational forces were deployed to eastern regions.

In autumn 1996 a new experimental type of military district was established in the northeast, centered in Chernihiv and designated as the Northern Operational/Territorial Command (OTC), with an army corps-level headquarters. This was an apparently makeshift way of filling the void in this critical defense perimeter. The current reform program envisions converting the present districts into three OTCs (Western, Southern, and Central) by 2005.

Military education. Ukraine inherited 34 military schools and faculties at 78 institutions of higher learning, far too many for its needs. Many reforms have been attempted and Kuchma has criticized the excessive turbulence in the military education system. By the end of 1996, after false starts and squandered resources, these institutions were reduced. Survivors include the Academy of the Armed Forces of Ukraine (Kiev), Military University (Kharkiv), and Medical Academy; three joint (interdisciplinary) military colleges; and five service branch colleges. In addition, there are six lyceums (mid-level military schools) and military faculties (departments) at 48 institutions of higher learning. Research centers also will be maintained in space and military meteorology, C^3 and electronic warfare, air defense, air combat, naval operations, procurement, and education and socio-psychological service.

In June 1996 the new Academy of the Armed Forces of Ukraine graduated its first class of 178 officers who will assume senior positions in the armed forces and ministry. At the same time 15 universities and institutes graduated 4,700 junior lieutenants in 150 military specialties.

Sociological Concerns

The military leadership must confront some serious issues before they can claim success in making reforms. When the armed forces were nationalized, they inherited a number of problems related to morale, discipline, readiness, and combat sustainability.

Force conversion and quality of life. While equipment reductions mandated by CFE were carried out quickly and smoothly, reducing personnel has been a daunting task. It is complicated by a commitment to generous entitlements which provide quarters, retraining and job placement, or social security for thousands of commissioned and noncommissioned officers released since 1992 in downsizing. More significantly, it has made officers still on active duty unsure of the future and has eroded their morale and interest in a military career.

The military shares the economic hardship of the entire population. They get comparatively low salaries which often have been delayed since 1995, in many cases for months. They line up to rent apartments like other prospective tenants. Some officers have organized illegal associations to lobby for their personal welfare. There have been demonstrations by officers and their families. In recent years the better qualified officers, especially in the ground forces, have left the service in search of opportunities in the private sector. This has especially been true of new officers, a native product, who after receiving a good education become disenchanted with economic conditions and leave on completing their short-term military obligation. President Kuchma recently called for the extension and enforcement of officer obligations.

All members of the armed forces have sworn allegiance to the Ukrainian state. But how many did so out of loyalty rather than because of economic or opportunistic motives is difficult to determine. The downturn in the economy has harmed morale and operational readiness, strained civil-military relations, and called into question the loyalty of the military in a crisis. It has also led to declining discipline. The rate of no-shows among recruits has gone up as has absenteeism without

Removing SS–19 missile from silo.

DOD (R.D.Ward)

BTR–80 APC on the Dnipro.

Vijsko Ukrainy

leave and outright desertion. Crime committed by servicemen also has risen. Exacerbating low morale in the enlisted ranks is the continuation of an often brutal barrack hazing widespread in the former Soviet forces and passed on to post-Soviet armies.

Ethnic relations. In the early years of independence there was a serious ethnic imbalance within the armed forces resulting from a deliberate Soviet policy of intermixing officers of various nationalities following World War II. Non-Russians were assigned to the Russian Republic and Russian officers, especially generals, were overwhelmingly assigned to non-Russian republics. In January 1992 ethnic Russians reportedly comprised 90 percent of general officers, 60 percent of field grade officers, and 50 percent of general staff officers in the Ukrainian armed forces. The situation gradually became more favorable to ethnic Ukrainians of company grade, especially as schools graduated cohorts of native Ukrainian commissioned and warrant officers. But the ministry of defense estimates there are still more than 150,000 ethnic officers serving outside Ukraine, mostly in the Russian Federation, many of whom want to come home. The situation has improved in the enlisted ranks, which since independence have been drawn from within the country, making them a better ethnic reflection of overall society, which is 73 percent ethnic Ukrainian.

the Ukrainization of the officer corps has shown great improvement

The Ukrainization of the officer corps has shown great improvement. By September 1995 military schools had graduated 27,000 new officers, the majority of Ukrainian nationality. During this period 33,000 Ukrainian officers were brought in from other Commonwealth of Independent States (CIS) countries, mostly from Russia. As of July 1995, ethnic Ukrainian officers accounted for 63 percent of regimental commanders, 72 percent of division commanders, 69 percent of corps commanders (seven corps), all directors of main directorates of the ministry, and all deputies to the minister of defense. Moreover, 67 percent of all generals and admirals were Ukrainian, 26 percent Russian, and 6 percent other nationalities.

Language of command. Closely related to ethnic composition is the language of command and communication. Russian was always the language of the Soviet armed forces which made it a powerful tool of Russification. That was abetted by an intensive Russification program in society at large, especially during the 1960s and 1970s. It not only hindered development of non-Russian military and technical terminology but also the use of non-Russian languages in the armed forces. It will be some time before Ukrainian becomes institutionalized as the language of command and communication. Until then it will remain a source of dissonance within the military.

Reeducation program. All senior officers were brought up in a closeted environment and indoctrinated with communist ideology and a Soviet world

BTR–70 APC, Bosnia.

Vysko Ukrainy

outlook. They were taught to think of themselves as part of an elite social class in Soviet (not national) society and imbued with Russian military traditions and history. This was a socio-psychological view in which there was no room for any reference to Ukrainian military tradition or history prior to 1917. After August 1991 many of these officers, largely disoriented by the rapid collapse of the Soviet Union, found themselves in the Ukrainian national armed forces and asked to swear allegiance to a new state that could hardly have been imagined only a few months earlier. Thus the military leadership of Ukraine has been faced with a giant and sensitive task—the political reeducation of its inherited officer corps.

The Rada abolished the former Soviet political officer structure and adopted the Educational and Socio-Psychological Service (ESPS), a structure organized down to company level or its equivalent. It was designed to impart the basic tenets of Ukrainian history, language, and military tradition and promote democratization of the armed forces. The university-level Kiev Institute of Humanities was established to train officers for ESPS duty in units and commands.

Reeducation efforts, especially attempts to strengthen national identity and promote the use of the Ukrainian language, has understandably created tension within the armed forces, largely due to an ambitious initial program under the first minister of defense. It has been toned down under subsequent ministers to make it more marketable (particularly to old-time former Soviet officers). The fourth minister, General-Colonel Oleksandr Kuzmuk, has pledged to reinvigorate such efforts; but the languid economy and social privations of the military temper any enthusiasm for them.

Civil-Military Relations

During five years of independence civil-military relations have generally been normal. The armed forces have not been politicized although the conditions for politization exist. Members of the armed forces, for example, are elected to parliament while on active duty although unassigned. The large and influential Association of Ukrainian Officers, with its active, reserve, and retired members, has been involved in electoral politics. There are also signs of a wider destabilization in civil-military relations because of the inadequate defense budget, pay problems, alienation in the officer corps, dissension among the top leadership, rumors of corruption, and squandering of resources.

Civilian control over the military is not fully institutionalized. Traditional control—through the president and parliament—needs to be extended to the level of the defense establishment as it is in all democratic states. From 1991 until 1994, all the ministers of defense and their deputies were military officers in the Soviet mold. In August 1994 Kuchma named a civilian, Valeriy Shmarov, as minister of defense, making Ukraine the first CIS country to take that step. Shortly thereafter, two other high-level defense posts—for the military-industrial complex and foreign relations—also were occupied by civilians. But the responsibilities of both the minister of defense and chief of the general staff were not legally delineated, and the ministry became ridden with internal civil-military conflict. Finally in July 1996, as a result of controversy over proposed military reforms and the public outcry over alleged mismanagement, corruption, and retreat from the "Ukrainization" of the armed forces, Shmarov was replaced by General Kuzmuk. This was viewed in many quarters both at home and abroad as a regressive step in democratization of the armed forces and the enhancement of civilian control of the military.

Since independence the armed forces have been held in relatively high esteem by society at large, though this feeling has not extended to young men of draft age. The recent increase in desertions and voluntary departures by junior officers is mostly due to economic hardships and not the prestige of the army. There are examples of civilian support of the economically struggling military: regional administrations agreeing to build one ship each for the nascent Ukrainian navy; private enterprises donating funds to build quarters, schools, and other amenities; and cultural groups touring bases at their own expense to entertain the troops.

Force Structure

By the end of 1996 the Ukrainian armed forces consisted of the following strengths (declared strengths for 1992 are shown in parentheses): personnel, 395,000 (726,00), not including paramilitary formations such as national

guard or various internal, border, railroad, or construction troops; tanks, 4,026 (6,300); air cushioned vehicles, 5,050 (6,170); artillery, 3,727 (3,080); anti-tank weapons, 6,000; surface-to-air missile sites, 934; aircraft, 1,090 (1,380); combat helicopters, 240 (240); and ships, 73. It is the largest force in Europe after that of Russia. But it has deficiencies. Ukraine, like Russia, cloaks its defense budget in secrecy. Information is only made public when the ministry or its supporters complain about inadequate appropriations. The budget for 1996 was 1.9 percent of GNP and estimates for 1997 were 1.3 percent. This was a quarter of the actual amount requested and left nothing for modernization after military pay.

Speaking to senior officers in December 1996, President Kuchma painted a bleak picture of the current military posture. He addressed four major areas—force structure and organization, modernization, readiness, and sustainability—and judged each as unsatisfactory.

Force structure and organization. In the five years since the formation of the armed forces, planners have not succeeded in developing tables of organization for various levels of military units and staffs to reflect new roles and missions, a point on which the president was highly critical. Many units are not properly manned under existing tables, which impacts on readiness. Similarly, reformers have failed to agree upon a new force structure in the ground army, which is still in part Soviet-vintage and does not meet national defense requirements.

Ukraine inherited a vast military-industrial complex—one third of the Soviet total

On a more positive note, emphasis has been placed on developing a quick reaction force with emphasis on mobility and maneuverability. By abolishing the operational armies, establishing the corps as the primary command and control maneuver organization, and increasing the number of independent brigades, planners have favored smaller, lighter units that can form force packages to meet specific operational requirements. In contrast to Soviet force structure, Ukrainian plans do not include either cadre or partially manned units. By reducing the number of tank divisions and converting artillery divisions to artillery brigades and airborne units to air mobile forces, planners have stressed defensive instead of offensive combat or force projection capability in ground forces. The ongoing albeit fiscally constrained conversion of motorized rifle divisions and brigades into mechanized divisions and brigades will afford them greater mobility and maneuverability.

There is an adequate force reconstitution capability. The Soviet mobilization structure with its commissariats is still basically intact. Ukraine has a pool of a million men who have served in the military within the last five years, which would permit the generation of new forces.

Modernization. Ukraine inherited a vast military-industrial complex—roughly one third of the Soviet total. It also contains some 15 percent of former Soviet defense industrial and military research and development facilities and ranks as the second-largest producer of arms and military equipment after Russia among the successor states. It can assemble all major categories of military hardware, and some facilities have unique capabilities such as shipbuilding and missile production. Ukraine has sold main battle tanks (T–72 and T–83) to the Third World (for instance, 300 T–83s to Pakistan in 1996) and is active in the foreign arms market (14th in the volume of its arms trade).

On the down side, the breakup of the Soviet Union and economic reform caused a hiatus in modernization as the industrial base endured disruptions in research, development, production, and fielding systems. A major shortcoming is that only a very small percentage of military production was "a closed cycle." As a result of deliberate manufacturing interdependence in the former Soviet Union, Ukraine still depends on Russia for many components and subassemblies. Its military-industrial complex has been reduced from 700 enterprises during the Soviet period to 400 in 1996, and production has fallen to 10 percent of 1991 levels. Research, development, and evaluation is largely underfunded, especially in areas such as anti-tank weapons, air defense systems, support of airborne and air mobile operations, and C^3I. With improvements in the national economy and an increased budget, the defense sector has the potential for remedying these shortfalls. It has the production capability, material resources, and trained manpower. But as the president indicated in his speech to the military collegium, defense leaders have failed to develop a master plan to reform the military-industrial complex and its capacity to generate new technology. As a result he ordered that such a plan be completed by mid-1997.

Readiness. The Ukrainian military inherited sufficiently equipped and qualified personnel. It has excellent training facilities and more than enough professional schools. But forces have been downsizing and restructuring under the deteriorating economy, which affects near-term readiness. Primarily for budgetary reasons the army has had trouble holding scheduled field training exercises to maintain its combat proficiency and conduct operational testing of major equipment. Although Ukraine is second to Russia in military fuel storage capacity and has large strategic fuel reserves, current operational fuel shortage has constrained normal training in the ground army and air force, restricting military vehicular and airplane traffic to the bare minimum. Pilots have not been able to log sufficient hours. The ground army and air force have weak logistical infrastructures that have not been fully reconfigured to meet specific defense needs.

Kuchma revealed in a December 1996 speech that as many as 191 mechanized infantry and tank battalions were rated not ready, adding, "This is especially dangerous in the forward-based units securing the nation's borders." In the last two or three years the air force lost 2,500 air crew members via voluntary departures; in

the bomber units only every third crew is rated ready; in the combat air units only three are combat ready while 25 are rated barely ready and 17 not ready. Air defense forces have conducted their first exercise since 1991; and since independence the leaders of the armed forces have failed to establish a single air defense system covering Ukrainian air space.

Semi-annual call ups have been barely adequate, primarily due to deferments (for example, in autumn 1993 two-thirds of all eligible men received some form of reprieve). In addition, both no-shows and desertions have been on the rise. The short post-commission obligation has resulted in massive departure of junior officers, creating a serious shortfall in second and first lieutenants. As Kuchma said, "In general, I judge the state of combat and mobilization capabilities of the army as unacceptably low." He ascribed this not only to the economy but lack of initiative, imagination, and decisiveness as well as "dilettantism" on the part of high-level staff officers, commanders, and the top echelons of the ministry of defense (which he has ordered cut by 1,000 officers).

Nonetheless, Ukraine should be able to forge a ready force. Many troops have had combat experience in Afghanistan, including some 3,000 generals and other officers on active duty. In the last four years, over 7,000 have performed U.N. peacekeeping missions worldwide, especially in Bosnia and Africa, at times under combat conditions. Ukraine has contributed support helicopters and is the third largest provider of strategic air transport to such operations.

Ukraine joined the PFP program in February 1994. Since then it has taken part in various exercises with central and eastern European and NATO forces. This year a special battalion-size unit was organized to provide mission-oriented training for peace operations. Bilaterally, Ukraine and Poland have organized a combined mechanized infantry battalion under rotational command. These activities are giving the military added albeit limited experience in the field and at sea as well as an introduction to NATO military organization and operations.

Sustainability. Given the weaknesses indicated above, sustainability—the ability to deploy sufficient forces and conduct sustained combat operations—can be rated as fair to poor. This will persist until adequate numbers of operational maneuver units and combat service support elements are reorganized, equipped, and trained. Both the army and the air force must rebuild their logistic infrastructures in order to field and sustain forces for a high-intensity conflict. The current force could conduct short-term combat operations but not a long war. Nevertheless, Ukraine is a serious regional military power even in its present situation. It can defend its western borders and provide a credible near-term deterrent on its eastern borders. This capability will be improved by reforms and other components of military power—force structure, readiness, and modernization—as they achieve normal levels.

The U.S. Connection

Defense and military contacts between the United States and Ukraine have been substantial since a memo of understanding and cooperation was signed by Washington and Kiev in July 1993. These contacts have included visits by the senior leadership and high level staff exchanges; service and combatant command visits and staff exchanges; major combined exercises such as Sea Breeze '96, Peace Shield '95 and '96, and Cooperative Nugget '97 which is currently underway; unit level visits and exchanges; port calls and ship visits; student exchanges; and various relationships involving members of the national guard, civil defense, and border guard units from Ukraine and the Army National Guard from the United States.

One new initiative is planning for an NCO development and education program to upgrade the Ukrainian NCO corps. Senior officers have attended courses at the George C. Marshall European Center for Security Studies in Germany since it opened its doors in 1994. A seminar program is being developed by the John F. Kennedy School of Government at Harvard for defense officials and senior officers. Finally, Ukraine has been active in PFP with U.S. assistance.

The armed forces which Ukraine inherited from the former Soviet Union have provided the nation with military leaders, manpower, and matériel to qualify as a major regional actor. Unless the national economy improves very soon, however, this force will lack the foundation to reform, maintain readiness, and modernize. In fact, as weapons and military equipment age modernization will be a burden on the frail national economy and will stifle recovery.

The Ukrainian military constitutes an important arm of the state structure and has played a major role in nation-building. The armed forces ensure national defense in a region suffering from a security vacuum since the collapse of Soviet power and provide the government and society with a large pool of educated and trained professionals. As in most new states, the military is a symbol of national pride, professing strong patriotism and setting an example of unselfish support to the common good. It serves as a school for acculturation and socialization by providing its soldiers, sailors, and airmen with a shared national and social milieu. In a weakly-defined nation, the armed forces are a positive integrating influence. At the same time, unlike some former Soviet republics, especially Russia, they have not been significantly politicized and in many ways are a stabilizing factor. In accepting a civilian minister of defense, the military consented to another level of control and paved the way for further democratization. In general, Ukraine has enjoyed normal and sound civil-military relations with good prospects for the future unless its security is either destabilized or its economy fails to improve. JFQ

French Military Reform and NATO Restructuring

F/A–18 and Mirage 2000s being refueled, Southern Watch.

U.S. Navy (Tom Pickett)

By RONALD TIERSKY

Downsizing and restructuring are part of a NATO-wide trend. In France, all components of the armed forces are affected, including the nuclear *force de frappe*. Three factors are shaping European militaries: the demise of the Soviet Union; budgetary constraints, especially in the realm of Euro-integration versus security (to meet Maastricht "convergence criteria"); and new missions which are replacing the old. The issue is: will revamped, professional, quick-reaction forces be up to new missions or will budget cuts result in a hollow military organization? Success will depend on relaunching strong economic growth and the government's determination to withstand current tensions until a single European currency is introduced and less constrained budgets return.

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Economics and Defense

When Jacques Chirac succeeded socialist François Mitterrand in May 1995 questions were raised over the balance of continuity and change in French foreign and defense policy as well as over European integration. Similarities and differences between neo-Gaullist and socialist policies sometimes do not conform to stereotypes. On the one hand, European integration

downsizing and return to the integrated command was provoked by the Maastricht commitments

and security policies under Mitterrand were quite realistic from the beginning, leading to unexpected continuity. On the other, since Gaullism has always been more a disposition than a policy, the neo-Gaullist policy of Chirac, like de Gaulle's own stance, is a remarkably flexible pragmatism based on a few principles, above all the pursuit of national interests.

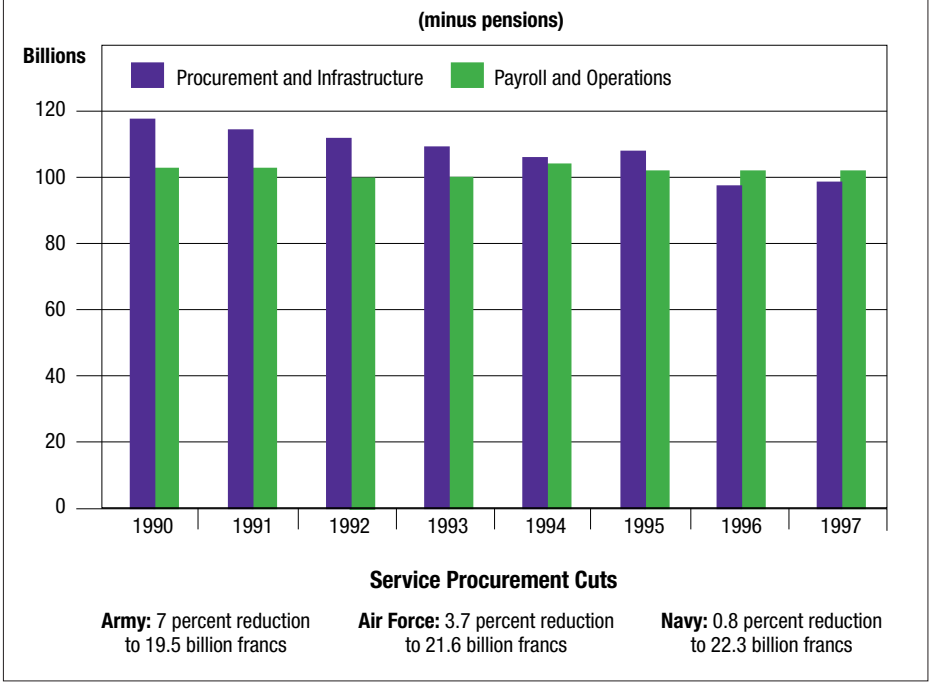
These aspects of integration are connected with Chirac's military reform and turn toward the NATO command in European security policy. His downsizing and restructuring of the armed forces and return to an integrated command—long recommended by military leaders (who realized how much technology and training the French military were missing)—was provoked by the need to finance Maastricht commitments. It was also a reaction to inadequate military performance in the Gulf War and in Bosnia, where French technology, weapons, interoperability, and the constraints of a conscript army all caused difficulties. Chirac has launched a wholesale recasting of security, defense, and military policies that Mitterrand had only begun. Examples of Mitterrand's intentions were European agreements to build advanced satellite intelligence capabilities and a large transport aircraft—both designed to reduce the Continent's dependence on American products.

Only weeks after taking office Chirac, determined to revive French defense efforts, broke with Mitterrand's moratorium on nuclear testing. A series of six underground tests met worldwide protests against French "arrogance." This included much-resented criticism from most members of the European Union (EU), though publicly Britain and Germany kept silent. The tests, conducted in the isolation of French Polynesia, had been conceived from the start—yet badly explained—as the last. The objective was to perfect software for simulations as was done by the United States which would help ensure the long-term reliability of the *force de frappe* without future testing.

These tests were completed in time for Chirac's state visit to Washington in January 1996, which allowed him to tell a joint session of Congress that his nation was ready—together with the United States—to lead the diplomatic campaign for a comprehensive test ban treaty. France, given certain guarantees by the United States, also accepted a provision prohibiting even very low-yield testing under the so-called "zero-yield option." The French also worked to get the Russians and Chinese to accept this provision.

In the U.N. General Assembly, 158 countries voted in favor of a resolution on the test ban treaty while three voted against (India, Libya, and Bhutan) and five abstained (including Syria, Lebanon, and Cuba). Chirac announced that France would join the other declared nuclear powers (four in all) by signing the treaty on September 24, the earliest possible date.

Figure 1. Defense Expenditures, 1990–1997 (in constant 1997 francs)



Downsizing

During his last few years, Mitterrand's attention to military reform had been piecemeal and the cohabitation government led by Eduoard Balladur (1993–95), despite issuing a white paper, did not make widespread reform an immediate issue. Military adaptation to post-Cold War conditions lagged behind Britain and Germany. By contrast, the reforms announced in February 1996 were a general plan that affects all services and every type of weapons system. The size, capabilities, and budget of the military, including the *force de frappe*, are being significantly streamlined (figure 1). Though the government is taking the same actions as most EU and NATO members (including the United States), France's excessive unemployment rate (over 12 percent) and slow increase in GDP

Tanker *FS Var* and aircraft carrier *FS Clemenceau*.

U.S. Navy (John Bouvia)

Helicopters in Goma, Zaire.

Combat Camera Imagery (Val Gempis)

(around 2 percent) for over a decade have exhausted popular patience, with the result that strikes and demonstrations against downsizing have contributed to the general debate on the economy.

Reform was not an easy political decision. Downsizing represented even more job losses for an economy in which successive levels of unacceptable unemployment (2 million, 2.5, then 3) have been reached. Furthermore, because the military is based domestically near towns that have become economically dependent on them, especially in France's "rust belt" of the north and east, more localities will be distressed by installation closures than in other countries.

The French and other Europeans increasingly see Maastricht as the cause of unemployment and austerity. The single currency project (the *Euro* scheduled to appear in 1999) is threatened by growing popular resistance. Moreover, weak economic growth and smaller tax receipts mean that military reductions, especially joint projects, have had to go further than in prosperous economies. For France, Germany, and other European members of NATO this vicious cycle must be broken. The problem is relaunching strong growth while sticking to Maastricht.

Chirac's plan of February 1996 for downsizing and modernization, combined with similar British and German

efforts, outlines the European military of the future. His model is the British military, which he has publicly praised. The gap between British and French performance during Desert Storm was not lost on the new French president, not to say the high command. The reform plan calls for moving from a Cold War, central front, defensive force to a rapid-reaction military that can be combined with the British and a German quick reaction conventional force that is also in the works. This fundamental reconfiguration plus the declaration that France is prepared to discuss all matters within NATO, even nuclear deterrence, indicates that in principle Chirac is serious about returning to an integrated command. Some organizational reforms proposed by France, however, such as European command of Allied Forces Southern Europe (AFSOUTH), are problematic. As a result, despite Chirac's NATO-friendly goal, serious disagreements appear to be locked in negotiation.

The Chirac reform shrinks the military from about 500,000 to 350,000, or—excluding the gendarmerie—from 400,000 (about half being 10-month conscripts) to 250,000. This constitutes a manpower cut of one-third and budget cut of one-fifth, though some analysts think the new army will be more expensive. This smaller force is to be built around four elite units with a capacity for rapid deployment to face ad hoc crisis situations which planners see as the most likely missions.

Chirac is also abandoning the longstanding Gaullist goal of maintaining self-sufficiency in all categories of weapons, especially in those areas where French manufacture has been particularly weak or nonexistent: satellite intelligence; command, control, and communications equipment; and strategic lift. There are also projects such as satellite intelligence (Helios) that the French want to share only with Europeans, thereby creating a capability independent of U.S. assets.

This in turn drives restructuring of the defense industrial base, with several state-sponsored mergers of nationalized and private-sector companies. However,

Key Elements of the AFSOUTH Debate

Progress on NATO internal adaptation has slowed. After extremely promising efforts to strengthen the NATO military structure, progress has been slowed by demands to convert AFSOUTH at Naples from a U.S.-led to a European-led command.

Theater commands are key. The role of NATO regional commanders has been enhanced significantly since the end of the Cold War. As NATO broadens its focus, adding crisis management operations to its core mission of collective defense, it is the theater commander who has been called upon to deal with conflict at the regional level. The United States has but one major subordinate commander in Europe, at AFSOUTH. Therefore the proposal to make AFSOUTH a European-led command would weaken the Alliance by weakening the U.S. leadership role in regional affairs at a time when that command is becoming increasingly important.

Negotiations have been difficult. The AFSOUTH issue has become difficult to manage for at least three reasons. As a result, a high level effort may be required to break the deadlock. The reasons are:

- The United States believes the changes it accepted in strengthening the role of the Deputy SACEUR (who is a European), adding other Europeans in command positions, and empowering the Western European Union (WEU) were important enough by themselves to warrant French reintegration into the unified command.
- Some Europeans interpreted articles 5, 7, and 8 of the June 1996 Berlin communique, which call on the parties to identify headquarters to support the European security and defense identity (ESDI), as a de facto pledge to transform AFSOUTH into a European command. The United States considers that interpretation a misreading of those articles.
- The issue was elevated in the autumn of 1996 by an exchange of correspondence between Presidents Clinton and Chirac, with Chirac calling for two regional NATO commands that would be "entrusted to Europeans" and Clinton responding that the United States should retain command of AFSOUTH. The exchange of Presidential correspondence has made subsequent lower level negotiations very difficult.

Progress in adaptation. Setting aside the AFSOUTH issue, there has been significant progress in the area of NATO adaptation—that is, strengthening of ESDI in NATO. For example:

- Three-fourths of the most senior NATO general officer positions in Europe are now held by Europeans.
- NATO-designated positions at all NATO headquarters in Europe were reduced from 18,354 in 1990 to 12,919 in 1996. This has resulted in a corresponding budget reduction from U.S. $621.6M (1990) to U.S. $482M (1996).
- WEU has been empowered to lead combined joint task forces in cases when the North Atlantic Council so decides.
- The European Deputy SACEUR could command such WEU-led operations.
- Mechanisms have been established to strengthen political control over military operations, something long sought by the French.

U.S. military strength remains crucial. The military assets and capabilities that the United States makes available to AFSOUTH warrant a U.S.-led command:

- The Sixth Fleet—which includes a carrier battle group, an amphibious ready group, and several submarines, all backed by U.S. Atlantic Fleet—is the single most important asset of AFSOUTH. The seamless connections created by dual hatting the U.S. commander of Naval Forces Europe and CINCSOUTH can be critical in time of crisis.
- U.S. air assets in Italy and Turkey have been critical to operations such as Deny Flight, during which in a typical week the United States flew 43 percent of the air missions.
- The importance of U.S. leadership and expertise in managing modern C^4I systems was demonstrated in the Bosnia operation.
- The growing need for advanced systems to counter ballistic missile proliferation targeted primarily at the AFSOUTH region will require continued American leadership and capabilities.

AMX–30 tanks outside Al-Salman during Desert Storm.

U.S. Air Force (Dean Wagner)

Given its strategic importance, AFSOUTH will remain a strong symbol of trans-Atlantic resolve. U.S. leadership will be essential at least until there is evidence that European leadership would be backed by European capabilities and resources commensurate with the importance of the region. With the recent and projected trends in European defense investments, it cannot be foreseen when adequate capabilities and commitment of resources would become a reality.

U.S. leadership is indispensable. A review of the recent history in the Balkans, Aegean, Persian Gulf, and Middle East indicates the indispensable nature of U.S. diplomacy and military engagement in key regions surrounding the AFSOUTH area of operation. In the case of Bosnia, for example, European powers in NATO were unwilling to undertake the follow-on Stabilization Force (SFOR) without significant U.S. participation. In Desert Storm AFSOUTH played a critical supporting role which was enhanced by the U.S. command.

The region is vital and volatile. An assessment of future prospects for these same areas suggests that they are both highly unstable and vital to both U.S. and European interests. In command of AFSOUTH, the United States is positioned to strengthen its diplomacy with military capability, and a U.S. commander at AFSOUTH will be one demonstration of that military capability. It will be in the interest of NATO for the United States to have this combination of diplomatic and military clout. The U.S. command at AFSOUTH enhances the ability of NATO to stabilize crises in the Mediterranean basin.

Because of the volatility of the region and the historical importance of AFSOUTH, there is a strong convergence of interests in maintaining an effective U.S.-led command. By its nature, the NATO command structure is intended to respond to risks that threaten the shared interests of all NATO members.

U.S. public is concerned. There remains considerable support for NATO among the U.S. public, the Congress and the academic community. There is also support for a U.S. leadership role and for increased burden-sharing. Given the increasingly operational nature of AFSOUTH, and the military and political requirement to have American forces engaged as a key part of future operations, loss of the command would probably be seen by the U.S. public as loss of U.S. leadership. As a result, U.S. public support for operations in this critical region would decline, along with support for NATO in general.

Simple command arrangements are best. The U.N. operation in Bosnia reinforces the lesson that complex command arrangements can contribute to failed operations. The thrust of NATO's command structure review has been to simplify lines of command. The solution to the AFSOUTH political problem should not result in complex command arrangements that could fail in time of crisis.

Summation of arguments. The arguments for retaining a U.S. commander at AFSOUTH are:

- AFSOUTH has emerged as a very important region in NATO and must remain a strong symbol of trans-Atlantic resolve and capabilities.
- By its nature the NATO command structure is intended to respond to risks that threaten the shared interests of all NATO members.
- This is the only U.S.-led regional command in Europe and losing it will weaken U.S. operational and political support for NATO.
- Significant measures have already been taken to enhance ESDI within NATO.
- Removing the command link between AFSOUTH and Sixth Fleet will increase reaction time in crises.
- IFOR/SFOR demonstrates the continued need for U.S. leadership in the area.
- Successful U.S. diplomacy in this vital region has been strengthened by the U.S. command at AFSOUTH.
- U.S. command at AFSOUTH can help stabilize tensions throughout the Mediterranean.
- NATO responses to new ballistic missile proliferation threats against the AFSOUTH area will benefit from a U.S. command.
- U.S. command facilitates participation by partner countries, including Russia.
- U.S. command maximizes the effectiveness of modern C^{4}I assets.
- Complicated command arrangements, such as a bifurcated regional and functional command at AFSOUTH, can harm NATO responsiveness in crisis. JFQ

—From *Allied Command Structures in the New NATO* (Washington: Institute for National Strategic Studies, National Defense University, April 1997)

Figure 2. Military and Civilian Personnel: 1995 and 2015 (projected)

	1995		2015	
Army	military	239,100	military	136,000
	civilian	32,400	civilian	34,000
		271,500		170,000
	9 divisions, 129 regiments 927 heavy tanks 350 light tanks 340 helicopters		85 regiments in 4 forces 420 heavy tanks 350 light tanks 180 helicopters	
Navy	military	63,800	military	45,500
	civilian	6,600	civilian	11,000
		70,400		56,500
	101 vessels (-SNLE) with 2 aircraft carriers and air group 6 nuclear-fueled and 7 diesel-powered submarines, 15 first-rate frigates displacement: 314,000 tons 33 sea patrol aircraft		81 vessels (-SNLE) with1 or 2 aircraft carriers and air group (+3 Hawkeyes) 6 nuclear-fueled submarines, 12 first-rate frigates displacement: 234,000 tons 22 sea patrol aircraft	
Air Force	military	89,200	military	63,000
	civilian	4,900	civilian	7,000
		94,100		70,000
	405 combat aircraft 86 transports 11 C–135 tankers 101 helicopters		300 modern Rafale aircraft 52 modern transports 16 tankers 84 helicopters	
***Gendarmerie* (paramilitary)**	military	92,230	military	95,600
	civilian	1,220	civilian	2,300
		93,450		97,900
	with over 300 armored cars and APCs, plus patrol boats, helicopters, etc.			
Common Services	military	18,130	military	12,600
	civilian	29,780	civilian	27,000
		47,910		39,600
Totals	military	502,460	military	352,700
	civilian	74,900	civilian	81,300
		577,360		434,000

government repositionings, some budget driven, have created serious Franco-German friction in joint projects. French arms exports will likely suffer, adding to unemployment and balance of trade difficulties.

Military reform stretches from soldiers to the nuclear deterrent. Professionalization meant, first of all, abandoning conscription. This decision did not raise as much controversy as one might expect, especially given historical, social, and ideological commitments to conscription as patriotic, republican, and egalitarian on the part of the right and the left. Opinion polls, however, found that almost 70 percent favored ending conscription—another case of waning ideological attachment in a "normalized" France. An all-volunteer army is planned by 2002.

Changing Adversaries and Structures

Conventional military strategy is being reoriented from defense of the central front within a divided Europe to general security problems, including terrorism. For example, the much-derided Eurocorps, theoretically operational since 1995 as a force whose purpose is strategic defense, may after an inauspicious beginning become the core of an after-implementation force

by 2002 a French force of 50–60,000 troops is scheduled to be deployable—quickly and at great distances

body. The Chirac plan is not a mere shrinkage of numbers and budgets but part and parcel of a cooperative allied restructuring of major EU military capabilities in which national force levels, capabilities, and strategies are in theory being harmonized—and made more Europeanized.

The less lustrous causes of downsizing are also clear: France, like other European powers, simply cannot mount full-blown military operations; and in the Gulf War it learned some difficult lessons. France had trouble deploying 12,000 troops during Desert Shield/Desert Storm, whereas Britain deployed double that number quickly despite having an overall smaller army. The French were also a less effective force (for example, they were unable to fly fighter-bomber raids at night for lack of radar). French units were obliged to rely on American logistics and intelligence.

By 2002 a French force of some 50–60,000 troops is scheduled to be deployable—quickly and at great distances. No longer will typical operations consist of a few hundred soldiers jerry-dispatched to former French Africa to put down a coup or replace a failing president. Germany, as already noted, is also developing a crisis reaction force of 55,000 to be in place by 1999. With the British and other EU forces, a European rapid reaction force of 250,000 is foreseeable.

Even the once sacrosanct *force de frappe* has not been spared. The 18 land-based Albion Plateau (Provence) missiles stood down last summer. One leg of the nuclear triad, albeit the least useful, was dropped along with a doctrine that France would not renounce any weapon possessed by other states. Both air-launched missiles and, importantly, nuclear submarines remain—a fleet of four submarines will be operational early in the next century. Chirac also decided to dismantle the short-range Hadès missiles as a gesture to German sensibilities.

Playing the NATO Card

The Franco-American dispute over AFSOUTH—the NATO command with headquarters in Naples—has led to a rancorous diplomatic exchange. This dispute is much larger than the issue of the nationality of one commander. The fact is that long-term issues are at stake. AFSOUTH is not an isolated case in creating a new NATO. In itself, there is no reason why it should be a sticking point in NATO reform, or whether France finally returns to the integrated command structure.

Seen in proper context, AFSOUTH is just the latest episode in a broader attempt—French though also European—to develop a "more visible" European security and defense identity (ESDI) within the Alliance. Thus this debate resulted from the larger June 1996 NATO Council European agreement with Washington to build ESDI inside NATO rather than the earlier European plan for a free standing Western European Union (WEU) force that would be a military arm of the European Union (EU)—WEU working with NATO but outside it.

The French have tried, with frustration, to make the case in politico-military negotiations with the United States for greater European leadership balance inside a NATO structure which will include ESDI. But this new balance is also a French code word for limiting American participation in the integrated command and especially what they see as "American unilateralism" in the way NATO functions. The French campaign over AFSOUTH has been largely a struggle inside NATO for the Europeanization of security and defense matters in Europe after the abandonment of plans for a free-standing WEU–ESDI because events in Bosnia prove, even to the French, that there was a continued need for American leadership in European security affairs.

But the French stand on AFSOUTH has received only half-hearted support from its main politico-military partners, Britain and Germany. This is because, while London and Bonn also can find Washington overbearing, they believe that American leadership is more important than playing dare-devil diplomacy to counterbalance Washington's influence in NATO. Bosnia proved that the United States is, in President Clinton's words, the "indispensable nation" for European security.

The French demand on AFSOUTH arose from three security policy events during Chirac's first twelve months in office. The first was his unexpected success—applauded all around—in prodding Clinton to lead the two days of air strikes needed to bring an end to fighting in Bosnia, thus intimidating the Bosnian Serbs into a truce and an eventual peace agreement. The second was the announcement of a plan for wholesale military reform. Paris was lagging behind other nations in overhauling its forces and Chirac's bold design aimed at organizing a rapid-reaction, downsized, leaner-but-meaner military within five years. The third was a seemingly un-Gaullist decision to bring France back into the integrated command structure that Chirac announced in the wake of the Dayton accords during a February 1996 speech to a joint session of Congress that referred to the "necessary" leadership role played by the United States. "NATO," he proclaimed on Capitol Hill, "simply doesn't work without American leadership."

Integrated Command

Chirac accepted that Europe's inadequacy in political coordination, determination, logistics, intelligence, and communications meant that any European defense identity must be created inside NATO. The French then had to insure that a European dimension of NATO—ESDI—would be as genuine and visible as possible. Franco-American antagonism was thus inevitable in that Chirac was determined to advance ESDI in NATO just as he had convinced Washington to take the lead in Bosnia. Many changes occurred before the clash over the French proposal to turn AFSOUTH into a rotating European command. This was in fact the last serious issue and most observers assumed that France would compromise prior to the NATO summit in summer 1997.

AFSOUTH became a test of wills. Washington thought the French proposal unacceptable: too much too soon. In Paris U.S. unwillingness to negotiate—President Clinton's flat no—was seen as a lack of reciprocity for the Atlanticist policy and attitude changes that Chirac had initiated. In June the new cohabitation government formed with Lionel Jospin's Socialists—who have never been accused of being pro-NATO—contributed to speculation that a deal on reorienting the integrated command structure would not be immanent. Ultimately, Paris will want to see European leadership positions in NATO regardless of the AFSOUTH debate. And France wants to achieve this shift in equilibrium and be seen by the United States and especially by Europe as having achieved it.

Thus the ambivalent support of his tactics and plans by Europeans worries Chirac. Britain and Germany, like other nations, clearly recognize France's military and economic weaknesses as well as perceive the domestic political fragility of Chirac's presidency and parliamentary coalition. They must doubt whether France could actually deliver on its grasp for greater leadership, whether vis-à-vis America or inside the European Council. For Europe as well as the United States, the Chirac gambit on AFSOUTH may indeed be over-reaching and asking for too much too soon.

As for Franco-American diplomacy, misunderstandings over what France wants as well as the precipitous escalation of the issue by Chirac to the presidential level in an exchange of letters that became public created a crisis atmosphere. For example, contrary

to first impressions made last August, Paris never asked for the AFSOUTH command for themselves alone. They proposed a rotating European command. The French say, furthermore, that they never envisaged European control of the U.S. Sixth Fleet, but that their proposals always assumed mechanisms to hive off the fleet in such a way that it would remain under U.S. command. And France also conceded that American doubts about European command experience, competence, and credibility were relevant and demanded answers. The Europeans, they assert, could get up to speed in two or three years. Therefore they asked for agreement in principle with implementation over time and thought that this was a quite reasonable request.

a more visible ESDI inside NATO is not only possible and desirable, it has to an extent already happened

U.S. policy, for its part, has three principles: military optimization must take precedence over any politically-motivated award of extra positions, which is an honored NATO tradition; there must be an unbroken U.S. chain of command over the Sixth Fleet stationed in the Mediterranean and the most important asset in AFSOUTH; and there must be no politico-military constraints on American action in extra-NATO security responsibilities, missions that only the United States can take on, in the Middle East and the Persian Gulf.

NATO Leadership

American officials willingly accept the idea of a new NATO leadership configuration which comports with a more visible ESDI. In fact, although often ignored by the focus on AFSOUTH, Europeanization has already occurred as demonstrated by the appointment of a powerful European deputy commander at Supreme Headquarters Allied Powers Europe (SHAPE). But AFSOUTH has taken on greater importance since the Cold War. Some specialists agree that in an operational sense this command is probably more significant than SHAPE because the Mediterranean and adjacent areas have become a region of potentially more serious security problems than central Europe.

Thus a more visible ESDI inside NATO is not only institutionally possible and politically desirable, it has to an extent already happened. The problem is the "extra" French proposal about AFSOUTH which came after the initial negotiations were concluded. Washington felt wronged by this added demand while Paris argued that successful conclusion of the initial talks did not preclude further proposals. America criticized France by stressing that command responsibilities ought to reflect national capacities and genuine contributions to NATO. This throws French commitments into doubt and indirectly asserts that only the United States can carry out the AFSOUTH mission. Americans point out that the French, although they started to rejoin integrated command institutions over the last year, have not yet shown their commitment by formally earmarking forces for NATO. The United States, in other words, was wary of stated intentions that may or may not be fulfilled.

French proposals for NATO restructuring might seem set in a sort of traditional geopolitical thinking that de Gaulle summed up with the aphorism: "A nation has neither permanent enemies nor friends, only permanent interests." Whether that was true in the 1960s, it may be less pertinent today in a world where major conflicts seem unlikely and economic competition has replaced force as the primary instrument of achieving national power. As for the absence of a Gaullist pedigree, even Chirac does not mind being seen as an Americanophile. Nevertheless, the defense of French national interests and European integration may yet require taking on one's friends.

France tends to stereotype U.S. foreign policy as sometimes neo-Wilsonian and other times *Realpolitik* Washington-style. However European-derived American realism is paradoxically less in favor among our allies than American idealism because the "objective factors" approach—power and the capacity to use it for policy ends—nearly always results in U.S. dominance. "Gaullism for everybody" is an intrinsically dangerous maxim for weaker powers.

The history of this century favors American reluctance in the face of enthusiastic European demands to be more visible and in control of security on the Continent. Through two world wars, the Cold War, the Gulf War, and Bosnia, Europe has needed U.S. military power and guarantees. Not surprisingly French negotiators in the AFSOUTH dispute want to talk less about the past than the future. Seen from that perspective, Franco-American friction over this command can be, if not resolved, at least understood. Some French officials have admitted that their AFSOUTH proposal was too much too soon. But for Paris it is not unthinkable, let alone wrong, to adopt a conflictual attitude even with a most important ally, to re-open negotiations for a good purpose. The problem is that Chirac perceived restructuring, particularly of AFSOUTH, against the backdrop of Bosnia. He forced his luck and lost, at least for now. He either miscalculated or just chose badly, perhaps because he was poorly informed by his advisors on the U.S. commitment in this matter. JFQ

Unloading supplies at Goma, Zaire.

U.S. Air Force (Andy Dunaway)

EUCOM and Sub-Saharan Africa

By NANCY J. WALKER *and* LARRY HANAUER

Sub-Saharan Africa is a region marked by both great promise and great peril. While some countries on the continent have begun to embrace democracy, move toward a market economy, and resolve long-standing conflicts, others suffer from ethnic tension, corruption, economic collapse, and waves of refugees. Both these prospects and difficulties pose challenges for the United States. The task of containing or preventing conflict while supporting successes requires a skillful balance of diplomacy, military resources, and humanitarian assistance.

The Armed Forces are uniquely positioned to play an important role in U.S. engagement in Sub-Saharan Africa. Since the end of the Cold War, we have deployed forces to Africa to evacuate Americans, provide humanitarian assistance, and assist the United Nations and other organizations in multinational peace operations. In addition to efforts on the ground, the U.S. military can help African states and regional organizations develop the political maturity, military professionalism, and economic growth necessary to solve their own problems and attain long-term stability.

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As U.S. Government agencies make tough decisions on mission priorities, the Department of Defense (DOD) has become, in the eyes of many in both Africa and America, the agency with the deepest pockets and highest-profile activities on the continent. In this age of declining budgets and scarce resources, however, it is important that DOD assets intended for Africa be strategically and carefully allocated to further U.S. priorities.

The proactive role performed by U.S. European Command (EUCOM)—which has an area of responsibility (AOR) that includes 37 of the 48 countries in Sub-Saharan Africa—is central to U.S. strategy in the region. Its overall commitment to robust and forward-looking engagement on the continent and willingness to dedicate resources to it helps shape U.S. policy there.

EUCOM Area of Responsibility in Sub-Saharan Africa

Unique Challenges

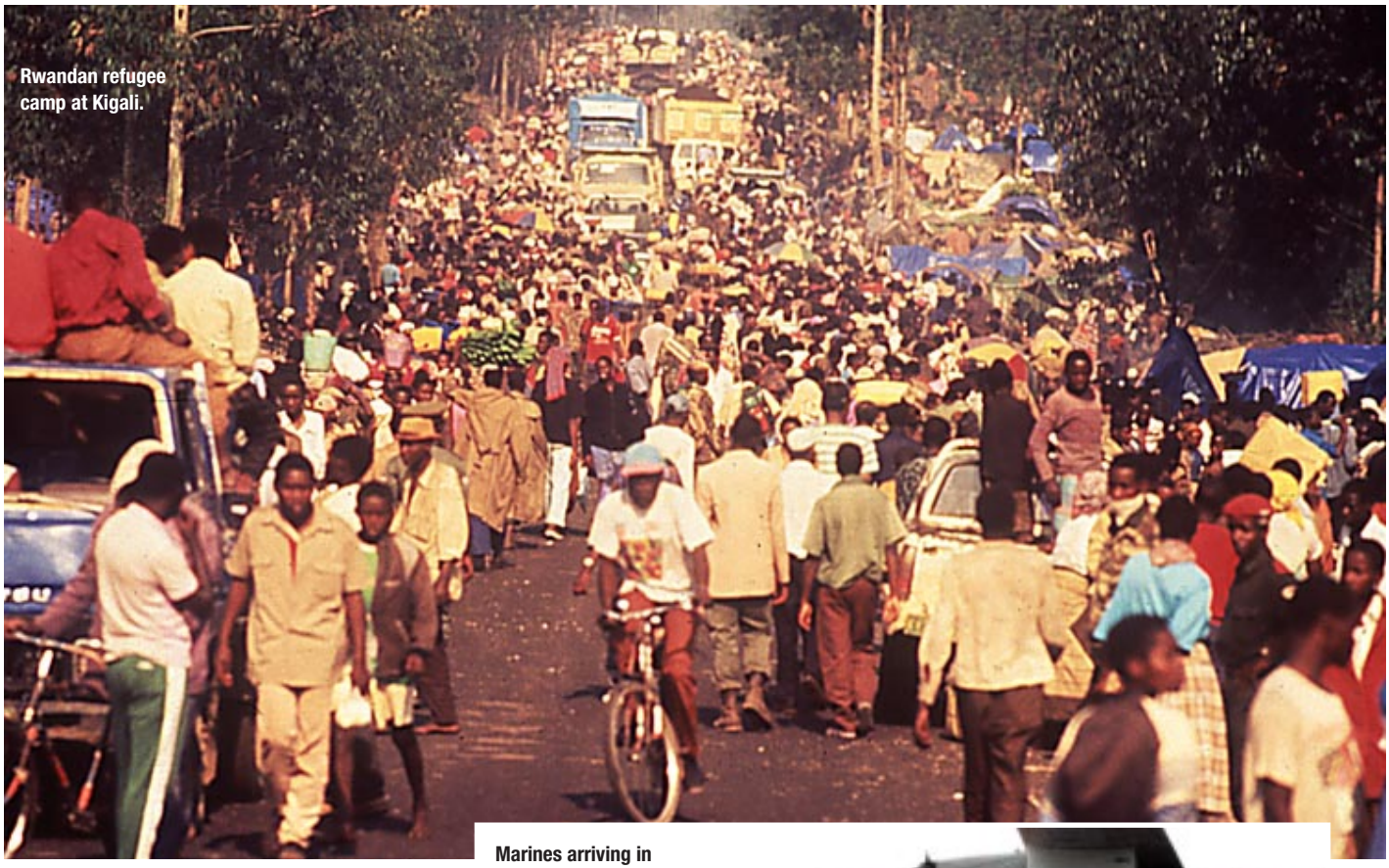
While the United States has limited strategic interests in Africa, events there might require significant American involvement and resources. Problems in this region are political, economic, social, and military in nature and stem from both external sources and internal instability. Future problems could come from failed states and the fragility of apparent successes in nation-building. Specific difficulties include:

problems could come from failed states and the fragility of nation-building

- the collapse of Zaire, Angola, Nigeria, Sudan, and other countries which could set off civil wars, halt the flow of oil, create waves of refugees, and threaten resident American citizens
- ongoing politico-military conflicts and resulting humanitarian crises in the former Zaire, Rwanda, Burundi, Angola, Sierra Leone, the Central African Republic, Sudan, and Uganda
- unprofessional, overstrength, and underpaid militaries with the potential for promoting *coups d'état*, human rights abuses, and political instability
- the increasing influence of Libya, Iran, and other pariah states, particularly in countries such as The Gambia where actions deemed unacceptable by the international community (like rigging elections) have resulted in the receipt of few resources from abroad
- ethnic tension, weak economies, narcotics smuggling, unequal income distribution, poor infrastructures, dysfunctional governments, and various other factors which have negative impacts on the stability of governments and the health and prosperity of indigenous societies
- the opposite situation in countries such as Senegal and Botswana where the militaries are professional and contribute to political development and long-term stability
- the emergence of democratic institutions in Mali, Zambia, and Benin as well as the corruption of "free" elections in The Gambia, Niger, and Nigeria
- support for and proactive partnership with the defense establishment in post-apartheid South Africa, which plays an extremely important role in stabilizing the situation across Sub-Saharan Africa.

A range of political, economic, and military assets are required to address these challenges and achieve primary U.S. objectives. The *United States Security Strategy for Sub-Saharan Africa* issued by the Secretary of Defense in 1995 outlines three policy goals that invite substantial and direct involvement: promoting peace by preventing, managing, or resolving conflicts; providing humanitarian assistance to alleviate suffering and hunger; and fostering democracy and respect for human rights.

The objectives of the EUCOM theater strategy, as found in the *Strategy of Engagement and Preparedness*, include



Rwandan refugee camp at Kigali.

Combat Camera Imagery (Val Gempis)

Marines arriving in Brazzaville, Congo.

U.S. Air Force (Greg L. Davis)

assisting democratization, responding to humanitarian crises, and playing a role in pursuing vital U.S. interests, especially protecting American citizens.

Many assets for attaining these objectives come from the arsenals of the four geographical commands with assigned responsibilities for Sub-Saharan Africa—EUCOM in the vast majority of the region, U.S. Central Command (CENTCOM) in the Horn of Africa, U.S. Pacific Command (PACOM) in Madagascar and island states along the coast of the Indian Ocean, and U.S. Atlantic Command (ACOM) in the nations of Cape Verde and São Tomé and Príncipe (see map).

EUCOM Activities

Because EUCOM has focused its resources and attention on addressing U.S. interests in Europe both during the Cold War and in the post-Cold War period of NATO expansion as well as peace operations in Bosnia, Africa has not been a major priority. Under the commander in chief, U.S. European Command (CINCEUR), General George Joulwan, the command has dramatically increased its activities there. General James Jamerson, the deputy commander in chief, has spent more time on the ground in Africa than his immediate predecessors, building relationships with and improving access to civilian defense officials and senior military officers. His visits to Angola and active role in the peace process, for example, helped further rapprochement in that country's long-standing civil war. The contacts he cultivated during a trip to Uganda in 1996 facilitated the swift approval by that country of the U.S. request to utilize Entebbe airport during Operation Guardian Assistance, a multinational humanitarian relief

Special Forces protecting fire fighters, Liberia.

1st Combat Camera Squadron (Paul R. Caron)

mission mounted in eastern Zaire during November 1996. These efforts have been assisted by the EUCOM political adviser, Ambassador Joe Wilson, a foreign service officer who has spent much of his career in Africa.

EUCOM activities from joint exercises to chaplain exchanges are crucial to U.S. objectives in Africa. The command's strategic vision states that "port visits, combined exercises, and visits by general officers play an important role in maintaining our relationships and influence. Security assistance in all its forms is often the prime form of our interaction with the nations of this region." Its activities include:

- promoting peace by preventing, managing, or resolving conflicts
- supporting development of an African crisis response initiative (assessments by EUCOM teams in several African nations as an effort to enhance the capabilities of regional militaries for timely and efficient participation in international peace and humanitarian operations)
- establishing a military liaison office in Monrovia where EUCOM is evaluating the needs of the West African peacekeeping force in Liberia, supervising delivery of U.S.-provided equipment, and furnishing military advice to the U.S. ambassador
- helping the Organization of African Unity (OAU) develop a conflict management center and, in particular, a conflict management exercise.

Fostering Democracy

Efforts to professionalize African militaries are crucial tools in promoting democratic values and institutions. Joint combined exchange and training exercises (JCETs) are integral to EUCOM engagement in Africa. Designed to provide training for U.S. troops, these exercises have the added benefit of training African forces. The approximately 25 exercises conducted each year—on light infantry tactics, leadership, and the role of apolitical military institutions in a democratic system—have been cited by senior civilian and military leaders as critical in professionalizing African militaries.

EUCOM conducts two multinational regional exercises each year which provide training in command and control and give Africans experience in operating in a multinational environment and with U.S. forces, which will greatly facilitate their participation in future international contingency operations. FY97 will feature exercises in Mali and Namibia. In addition, medical exercises are conducted twice each year to provide training in preventative medicine as well as improve overall health services. An exercise was held in Mali in September 1996, and Benin and Sierra Leone will receive training during FY97.

Finally, in an effort to establish a course for African civilian officials and military officers on defense planning and management in democratic societies, EUCOM is working with the Office of the Secretary of Defense to explore the establishment of an African security studies center.

Humanitarian Assistance

EUCOM is helping Mozambique, Rwanda, and Namibia develop sustainable humanitarian de-mining efforts to reduce civilian suffering and economic hardship. U.S. forces employ a train-the-trainer approach which enables host countries to continue these programs after their departure.

Americans were pre-deployed for Guardian Assistance to Uganda, Rwanda, and Kenya in support of a multinational force organized to assist hundreds of thousands of Rwandan refugees in eastern Zaire. The main body of the force was never deployed since more than 100,000 refugees returned to Rwanda on their own.

In the wake of a Hutu-led genocide that claimed hundreds of thousands of Rwandan lives, several hundred Rwandan refugees faced death from cholera each day in overcrowded camps on both sides of the Rwanda-Zaire border. EUCOM deployed water purification units to the area for three months which ended the health crisis and enabled nongovernmental agencies to again provide relief services during Operation Support Hope in July 1994.

EUCOM also is key to accomplishing the unstated but perhaps most crucial U.S. objective, ensuring the safety of Americans and third-country nationals by evacuating U.S. Mission and other personnel from danger spots. Most noncombatant evacuations and embassy departures have arisen in Africa, including the Central African Republic (1996), Liberia (1996), Sudan (1996), and Zaire (1991, 1993, and 1997). Excellent and proactive contingency planning—sometimes conducted in conjunction with allies such as France in the Central African Republic—help to guarantee that these operations go smoothly. EUCOM teams also

Unloading C–141 at Libreville, Gabon.

U.S. Air Force (Andy Dunaway)

travel to the region to work with our embassy staffs to ensure emergency plans are thorough and up to date.

Resource Allocation

EUCOM is only one of many DOD components active in Sub-Saharan Africa. In addition, a dozen agencies administer various programs. Training and assistance programs are conducted by the Office of the Secretary of Defense, the military services (including the Reserve components), and U.S. Special Operations Command; Departments of State, Commerce, Agriculture, Justice, Labor, Transportation, Treasury, and Health and Human Services; and Agency for International Development, Peace Corps, and U.S. Information Agency. Overlap and lack of coordination and collaboration often mean that different agencies may duplicate efforts or even work at cross-purposes. In a period of diminishing resources, interagency communication must improve to increase the effectiveness of U.S. programs on the continent.

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The Office of the Secretary of Defense, working in concert with other DOD components, is developing a comprehensive strategy for engagement in Africa. It will identify U.S. interests and provide a blueprint for allocating resources to pursue them. It will also identify countries in which an infusion of resources could either save a state from disaster or help a capable military enhance its skills to become a valuable partner in international operations. A central element of this strategy is thus prioritizing U.S. interests so that resources can be allocated to countries where we have the greatest stakes and can make the largest impact. This is a crucial step since the Cold War tactic of providing resources to virtually every country in Africa to keep the Soviet Union from gaining a stronghold can no longer apply. The EUCOM strategy echoes the need for prioritization by pointing out that engagement requires us "to systematically focus our efforts where we feel that they can make a difference." JCETs, international military education and training, and other resources thus should go toward professional development. Prospective partners such as Senegal, Ghana, and Ethiopia—which have offered to contribute forces to an African crisis response initiative and share the burden of conducting peace operations in the future—should receive priority assistance.

EUCOM and other U.S. Government agencies operating in the region must better prioritize the allocation of resources. All too often an ambassador or a zealous desk officer in Washington influence the military and others who allocate resources to support programs in countries in which there are few U.S. interests and only limited security concerns. As available resources decline and many agencies continue to reduce their presence overseas, DOD is often perceived as the only U.S. Government agency with available assets. On balance we must resist pressure to allocate scarce defense resources to countries in which the United States has limited interests.

U.S. interests in Sub-Saharan Africa have changed greatly since the end of the Cold War, yet our security strategy for the region has only begun to respond to new challenges. Rather than simply distributing resources to pro-Western or anti-Soviet clients, the United States has started to constructively address Africa's security problems and has thus worked to minimize new challenges to U.S. security. Programs that professionalize African militaries, encourage democracy, alleviate suffering, mitigate humanitarian disasters, and allow governments to solve their own problems have had a tremendous impact on the effectiveness of U.S. policy in the region. The major role played by EUCOM and other regional commands in Sub-Saharan Africa has made these efforts possible.

As the United States continues to develop partnerships with the defense establishments of this region, EUCOM and other DOD components must improve their process of setting priorities and allocating resources. A continued high-level commitment to Africa by geographical commands and Washington is instrumental to furthering U.S. engagement and achieving objectives. JFQ

Diving at TWA flight 800 crash site.

U.S. Navy (Charles L. Withrow)

Forgotten Mission: Military Support to the Nation

By DAVID L. GRANGE *and* RODNEY L. JOHNSON

Throughout U.S. history the military has been used to suppress insurrection and rebellion, enforce the law, and perform various other roles at the request of Federal, state, and local officials. The role of the Armed Forces in crises is mandated under the Constitution and has been exercised since the Shay Debtor Rebellion in 1786.

While support to the Nation is often overshadowed by the high-profile role of defending it, military support is a critical, long-standing mission that continues to grow. This is revealed by the number and variety of domestic disasters and events to which the Department of Defense (DOD) has responded in recent years. Extensive support by the services and defense agencies is important to minimizing loss of life and property in a range of operations which frequently go unpublicized. This article outlines responsibilities for Federal support, the system which facilitates that support, and the extent of DOD assistance in selected domestic operations.

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Federal Responsibilities

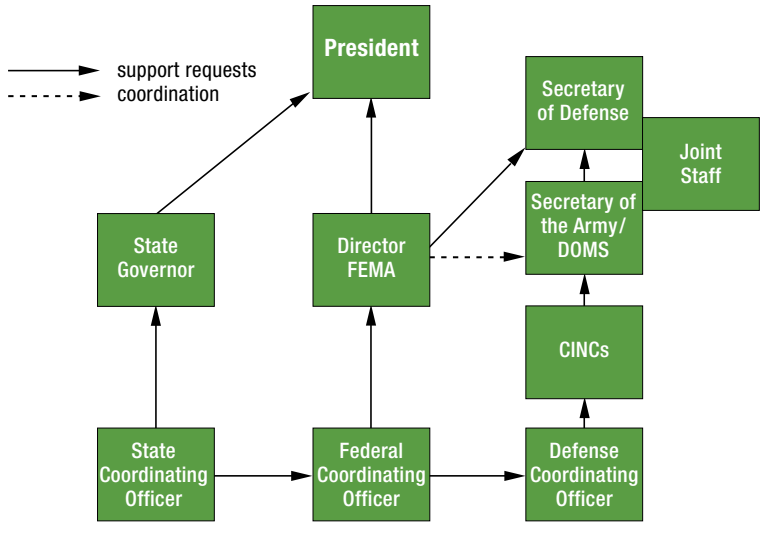
Article I, section 8 of the Constitution states, "Congress shall have power . . . to provide for calling forth the militia to execute laws of the Union, suppress insurrection, and repel invasions." Article IV, section 4 expands this authority: "The United States shall guarantee to every state in this Union a republican form of government, and shall protect each of them . . . against domestic violence." The modern authorization for Federal support to civil authorities is based on the Robert

T. Stafford Disaster Relief and Emergency Assistance Act (public law 93–288) and the Economy Act. The former enables the Federal Government to "provide assistance to U.S. states, territories, and possessions to alleviate suffering and mitigate damage resulting from major disasters and civil emergencies." The latter empowers Federal agencies to provide routine support to each other under certain conditions if reimbursed. The key agency for emergency assistance to civil authorities is the Federal Emergency Management Agency (FEMA). By executive order the President appointed FEMA as the lead Federal agency (LFA) for disaster and emergency assistance and as proponent for the Federal response plan (FRP). Published in 1992, that plan details how 28 Federal departments and agencies will supplement state and local government responses.

Figure 1. Federal Response Plan

Support Function	Lead Agency
transportation	Department of Transportation
communications	National Communications System
public works and engineering	Department of Defense
firefighting	Department of Agriculture
information and planning	Federal Emergency Management Agency
mass care	American Red Cross
resource support	General Services Administration
health/medical services	Department of Health and Human Services
urban search and rescue	Federal Emergency Management Agency
hazardous materials	Environmental Protection Agency
food	Department of Agriculture
energy	Department of Energy

Figure 2. Disaster Support Relationships



In order to manage Federal assistance, FRP classifies assistance into 12 emergency support functions and assigns primary responsibility for them (see figure 1). DOD is the primary agency for public works and engineering and has named the U.S. Army Corps of Engineers as operating agent for planning, preparedness, and response. In addition, DOD provides support to designated lead agencies in responding to all other functions. FEMA is also tasked as LFA for consequence management, defined as actions taken to provide an immediate response to an incident to contain and mitigate its effects. By contrast, the Federal Bureau of Investigation (FBI) is LFA for crisis management, defined as measures to resolve a hostile situation, investigate, and prepare a criminal case for prosecution under Federal law.

When a domestic disaster occurs, the first relief assistance is provided by the local police, fire departments, and rescue organizations. Depending on the severity of the disaster, the next level of aid is normally through state disaster relief organizations that can call upon all state assets. The governor will appoint a state coordinating officer (figure 2) in major disasters and can also put the National Guard on state active duty which is a tremendous asset and is used extensively in most states. As an example, the daily employment average for National Guard assets in FY96 was 1,760 man-days. The governor may request help from the President when local needs exceed state resources. When required, FEMA will appoint a coordinating officer to correlate Federal disaster relief assistance. FEMA and that officer then function as the vital link between state requirements and DOD assistance.

Organization

The Secretary of Defense delegates authority to provide military support for civil authorities to the Secretary of the Army who, as executive agent, exercises operational control over all DOD components including the services and defense agencies. Specific requirements include developing planning guidance, plans, and procedures for military support; tasking components to plan for and commit resources in response to requests from civil authorities; and developing (and tasking DOD components to develop) generic and incident-specific support plans. The Assistant Secretary of the Army for Installations, Logistics, and Environment is responsible for oversight of military support to civil authorities (MSCA). The Directorate of Military Support (DOMS) is the DOD action agent for planning and coordinating this support on behalf of the Secretary of the Army.

DOMS is led by an Army major general who is also the director of operations, readiness, and mobilization in the Office of the Deputy Chief of Staff for Operations and Plans, Headquarters, Department of the Army. DOMS and its designated staff element, the Military Support Division, essentially function as a joint staff, with both Air Force and Navy one-star officers serving as deputy directors. The DOMS staff has the responsibility to plan, coordinate, and manage the full range of MSCA operations. It routinely coordinates with FEMA and the other Federal departments and agencies and also participates in interagency disaster relief exercises. In this capacity its staff is represented on the FEMA catastrophic disaster response group executive committee.

DOMS and the Military Support Division essentially function as a joint staff

U.S. Air Force (Val Gempis)

Fighting forest fires in Clear Lake, California.

The executive agent has designated the commanders in chief of U.S. Atlantic Command (ACOM), U.S. Pacific Command (PACOM), and U.S. Southern Command as the DOD operating agents for MSCA for states, territories, and possessions in their areas of responsibility. ACOM, with the contiguous 48 states, assigns lead operational authority (LOA) to its Army component, Forces Command (FORSCOM), which accordingly can task other ACOM component commands. Moreover, in coordination with DOMS and the Joint Staff, it can task supporting CINCs such as U.S. Transportation Command and supporting defense agencies.

Both PACOM and FORSCOM have designated defense coordinating officers (DCOs) for states and territories in their respective areas of responsibility. When deployed these officers, who are usually Army colonels, are the DOD representatives on the ground with authority to validate all requests for support. They forward validated requests to either a joint task force (JTF) or response task force (RTF), if constituted, or to higher headquarters. DOMS will then staff the request and if appropriate task a defense element to provide the support.

JTFs are normally formed for command and control of operations when significant forces from more than one service are deployed. Recent examples of JTFs include the Los Angeles riots (1992), Hurricane Andrew (1992), and the Olympics (1996). RTFs are formed to support Federal responses to terrorist incidents which involve weapons of mass destruction (WMD). The elements of RTFs were prepositioned during the Olympics and the last Presidential inauguration.

Standing and Directed Missions

The Secretary of the Army has seven standing missions as the executive agent for support. They include disaster relief, wildland fire fighting, civil disturbances, immigration emergencies, postal disruptions, animal disease eradication, and military assistance to safety and traffic (MAST). Among them, support to the Postal Service during labor disputes is potentially the most personnel-intensive albeit the least likely. If fully implemented, more than 190,000 military personnel would be committed to safeguard, process, and deliver mail. The MAST program provides aeromedical evacuation for civilian communities. Army and Air Force medical evacuation units have flown in excess of 100,000 hours since the program began in 1973. Any disaster requires a swift response to minimize suffering and loss of life, and military units are ideally suited for this role. DOD has supported more than 200 domestic disaster relief operations since 1975. It also supports Federal fire fighting efforts. For example, more than 1,200 active duty soldiers and marines fought fires in California and Oregon during 1996. Military assistance in civil disturbances is probably the most sensitive mission since use of the Armed Forces to reestablish law and order requires involvement at the highest national level. The last mission of this type was conducted in 1992 when 13,000 active duty and Army National Guard personnel were employed in efforts to restore order in the Los Angles metropolitan area.

In addition to standing missions, the Secretary of the Army also executes directed domestic support missions. The Atlanta Olympics set a precedent for the level of both military and civilian agency contingency support. DOD support

included 14,653 active and National Guard personnel from 47 states and territories, over 300 aviation support missions, and more than 300,000 items of equipment for use by state and local authorities.

Planning for the Presidential inauguration in January 1997 involved six months of intense work by DOMS. Although the Armed Forces Inaugural Committee is historically responsible for routine military support to the inaugural, the Secretary of the Army was responsible for ensuring a coordinated DOD response for contingency operations during that period. Critical tasks included development and coordination of command, control, and communication procedures for possible contingency operations; interagency meetings to clarify responsibilities and support requirements; execution of a tabletop exercise for 80 action-level attendees from numerous agencies to discuss, clarify, and coordinate roles; conduct of a decision session to finalize plans in November 1996; and distribution of an execute order outlining extensive DOD requirements.

DOD support to civil authorities is requested almost daily

The latest directed mission is implementation of the Nunn-Lugar II Domestic Preparedness legislation. The Defense against Weapons of Mass Destruction Act of 1996 requires the Secretary of Defense to execute a program to enhance Federal, state, and local agency capabilities to respond to incidents involving WMD. As DOD executive agent, the Secretary of the Army is tasked with developing and implementing guidance, plans, and procedures to establish a coordinated national program. As action agent, DOMS is initiating extensive interagency coordination and planning to sustain this program. Specific tasks include providing emergency response training, advice, and assistance; activating a chemical-biological hotline; assisting in the development and maintenance of rapid response teams; testing and evaluating preparedness; helping in the inventory of physical equipment and assets; and procuring equipment to interdict WMD movement.

DOMS is charged with integrating all capabilities in a consolidated program and is currently staffing additional guidance on timelines, budget procedures, reporting requirements, and specific responsibilities associated with the above tasks. The Secretary of the Army recently appointed the Army Chemical Biological Defense Command to implement the program. Other key assets include the Marine Corps Chemical and Biological Incident Response Force, Naval Medical Research Institute, Air Force Technical Application Center, and Army Technical Escort Unit.

Requests for Support

DOD support to civil authorities is requested almost daily. While most requests come from the appropriate LFA, some are received directly from local civilian or state authorities and directed to the right channels. In an ideal world requests would be submitted formally in writing, but swift response is often essential and DOMS begins to coordinate requests after an initial phone contact. The entry point for written requests is the Office of the Executive Secretary which processes them, conducts an initial evaluation, and forwards the requests to the Secretary of the Army for action. By exception all requests related to counterterrorism are forwarded to the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict for evaluation and action.

DOMS is tasked to ensure that requests are staffed with all the parties concerned and that any action meets six criteria: legality (authorization and applicability of *posse comitatus*); lethality (use of force by or against military personnel); risk (safety of personnel); cost (responsibility for expenditures and their budget impact); readiness (implication for performing primary mission); and appropriateness (mission best served by DOD or other means). Requests are coordinated with the Joint Staff, services, general counsel, and supported commands which provide support as well as supporting commands and defense agencies. Once coordination is complete, DOMS is responsible for finalizing the execute order and submitting it to the appropriate official for approval.

The Secretary of the Army can approve most requests for DOD support as executive agent; however, the Secretary of Defense must personally approve responses in cases of terrorism or civil disturbance, use of CINC-assigned forces, and support to law enforcement when confrontation or use of lethal force is anticipated. For requests which require approval by the Secretary of Defense, DOMS prepares a recommended course of action and forwards it to the Secretary through the Joint Staff and Chairman. Following a decision, the Chairman will send the order through DOMS to the appropriate CINC for execution and management by the Secretary of the Army.

Such support to civil authorities is extensive and occurs on an almost daily basis. The eight most extensive support requirements during FY95 and FY96 are summarized in figure 3. It should be noted, however, that DOMS spends considerable time coordinating relatively small yet critical requests for particular types of expertise or equipment. This support is normally requested when it would be too costly to procure the skill or equipment required for one-time use or when timeliness does not allow for normal procurement. Recent cases include a technical escort unit to

Sandbagging Grand Forks, North Dakota.

Aftermath of Hurricane Andrew.

319th Communications Squadron (Charles Morris)

U.S. Army (Zedrick G. Rockett)

Figure 3. DOD Support to Civil Authorities, Selected Operations: 1995–1997

Event	Date	(peak DOD strength) Active Duty	National Guard	Corps of Engineers
Oklahoma Bombing	April–May 1995	457	545	48
Hurricane Marilyn	September–November 1995	1,227	930	200
Summer Olympics	June–August 1996	1,277	13,376	–
TWA Flight 800	July–November 1996	740	170	22
National Conventions	August 1996	328	1,397	–
Western Forest Fires	August–September 1996	1,265	930	–
Hurricane Fran	September–November 1996	756	4,134	397
Presidential Inaugural	January 1997	4,736	540	–

support a Ricin chemical agent seizure by the Federal Bureau of Investigation in Missouri; engineer support after a dam break in New Hampshire; personnel and metal detectors to conduct a search by the Secret Service for counterfeit money in Michigan; and providing air transport for FEMA urban search and rescue teams responding to disasters. Every request must be properly staffed to ensure that the support is appropriate and not in violation of *posse comitatus* (title 18, U.S. Code, strictly prohibits the use of Federal troops for law enforcement).

Hurricane Fran

The hurricane that struck near Cape Fear, North Carolina, on the evening of September 5, 1996 had maximum sustained winds of 115 mph. Although its strength quickly diminished, in the next 12 hours it caused 26 deaths, severe flooding from up to 15 inches of rain, $1.5 billion in damage, and a power loss to 800,000 households across five states.

The response to Fran started prior to its actual arrival. FEMA (the lead Federal agency) and DOMS began 24-hour operations at 0700 hours on September 4. That same day DOMS received five formal taskings for DOD support and released an execute order for it at 2000 hours with the commander in chief, ACOM, tasked as supported CINC. Initial actions required a C–141 to move a prepositioned forward assessment team from Texas to North Carolina on September 5, the use of Fort Jackson to billet and support the emergency response team-national until mission completion, and nine helicopters to transport the team and support other missions. All missions were completed as required prior to the arrival of the hurricane.

U.S. Air National Guard (Mark A. Moore)

Oklahoma City, April 1995.

DOMS coordinated all support operations directly with FEMA until September 6 when the President issued a major disaster declaration for portions of North Carolina. At that time ACOM deployed a DCO and a disaster coordination element (DCE) to Fort Bragg to handle requirements for support. Until it stood down on September 28, DCE coordinated all support and forwarded requests to higher headquarters or DOMS only when they exceeded local capabilities. Ultimately DOMS worked 16 formal requests for support prior to ceasing 24-hour operations on September 9.

DOD support to Fran recovery operations was extensive and critical to minimizing the loss of life and suffering. Peak strength included 756 active duty soldiers, 4,134 National Guardsmen from eight states on active duty, and 397 members of the Corps of Engineers. The majority of active duty support was provided by DCO and DCE from the Federal mobilization site at Fort Bragg and also by elements of XVIII Airborne Corps which removed debris and provided relief assistance. Of particular note was support by the Corps of Engineers that included damage surveys, power restoration, water and ice delivery, dredging operations, and debris removal. As of November 13, it had taken away 3,411,695 cubic yards of debris, provided over 200 generators for emergency power, and delivered some 3.5 millions pounds of ice and 550,000 gallons of water. In addition, the Corps of Engineers dredge *McFarland* removed 170,000 cubic yards of material in efforts to clear Wilmington harbor.

Oklahoma City

The bomb that was detonated outside the Alfred Murrah Federal Building in Oklahoma City on April 19, 1995 resulted in 167 dead, 467 injured, and two missing. Unlike a hurricane there was no warning. The event highlighted the ability to provide technical support on extremely short notice in support of civil authorities. Fort Sill dispatched two medical evacuation helicopters and Tinker Air Force Base deployed a 66-man rescue squad. Under his immediate response authority, the Secretary of the Army directed DOMS to establish the 24-hour crisis action team one hour after the explosion and sent a liaison officer to FEMA headquarters. DOD ultimately provided technical support and equipment to many agencies including the Federal Bureau of Investigation as LFA for crisis management and FEMA as LFA for consequence management.

DOMS received its first request for support three hours after the bombing when FEMA requested transportation for an urban search and rescue team from Phoenix. An airborne C–141 from McCord Air Force Base was immediately diverted to Luke Air Force Base to support the team tasking and further actions were initiated in anticipation of a Presidential declaration of emergency. Following the declaration later in the day, DOMS staffed and issued an execute order tasking the commander in chief, ACOM, as supported CINC. DCO and the nucleus of DCE arrived at 1800 (eight hours after the blast) and began coordinating all on-site requirements for support. The team from Phoenix reached the site at 2130 and other support arrived throughout the night.

Although the last formal request for support was received on April 29, DOD continued to assist in rescue and law enforcement efforts until the end of May. The peak strength reached 1,002 personnel and included a large amount of aviation and ground transport, specialized equipment with operators, and life support items.

Air National Guard

Standing watch at Olympic games.

Olympic Games

During the olympic games, held from July 19 to August 4, 1996 at 96 venues in four states and the District of Columbia, the focus of planning was on Atlanta. It was there that organizers projected 300,000–600,000 visitors per day as well as the presence of 40,000 volunteers and 15,000 media. As could be expected, the competition set a precedent for the level of support requested and provided by DOD and other Federal agencies.

DOD planning was initiated in response to a memo issued by the Secretary of the Army in August 1995 that outlined a framework for support. The Secretary was also designated executive agent for all DOD support, and DOMS was tasked as the action agent for executing all missions involving the Olympics. In addition, the commanding general, FORSCOM, was tasked to furnish general officer oversight and a task force commander. The specific mission was twofold: provide DOD non-emergency support and prepare to execute appropriate emergency contingency plans to assist civil authorities.

The impact of support to the Olympics was significant. More than 14,000 active, Reserve, and National Guard personnel were directly committed in Atlanta and other sites. The majority of military personnel were members of the Army National Guard from 47 states and territories who supported security operations at the 96 venues. More than a thousand active duty soldiers, sailors, marines, and airmen transported athletes, officials, and law enforcement personnel among various olympic villages and widely dispersed venues.

more than 14,000 personnel were directly committed in Atlanta and other sites

The military flew over 300 missions in support of law enforcement and security operations. DOD also provided more than 300,000 items of equipment and supplies to more than 60 Federal, state, and local law enforcement agencies and organizing committees. Bomb disposal personnel responded to 490 calls about suspicious items. Logistical support was provided to DOD personnel at nine base camps by a joint logistical task force with 1,300 members.

A tremendous effort was made to ensure a coordinated, immediate response for emergency contingency operations. Assets prepositioned and/or forward deployed to the Atlanta area for the Olympics included 26 explosive ordnance disposal teams, three chemical-biological technical escort units, a response task force advance element, DCO and DCE liaison officers, FORSCOM and First Army emergency operation centers, helicopters for current and on-call missions, and a chemical-biological pharmaceutical package.

Moreover, DOD developed detailed plans to ensure that critical assets were readily available for deployment to the area. This included a response task force, chemical-biological advisory and response teams, chemical-biological laboratory and diagnostics capability, added air evacuation and medical triage teams, and other specialty assets. Clearly, DOD support was essential to the success of one of the largest and most complex peacetime events of this century.

TWA 800

On July 17, 1996 a flight bound for Paris exploded in midair and crashed off Long Island with the loss of all 230 passengers and crew members on board shortly after it took off from JFK International Airport in New York. This tragedy highlights the ability to provide a range of multi-service technical support and specialized equipment.

The National Transportation Safety Board was designated LFA while the Federal Bureau of Investigation conducted a collateral investigation. The first military support was provided almost immediately by the New York National Guard which activated an emergency operations center and dispatched a C–130 with illumination flares and a helicopter with forward-looking infrared radar. Support was coordinated, approved, and funded by the Air Force Rescue Coordination Center. The National Guard continued to provide support over the next three months with a peak strength of 170 personnel, two helicopters, and 27 vehicles. Its critical support included assisting in search and recovery, roving patrols, cleanup and sustainment, and passive security which was provided under state authority at the governor's direction.

The Navy received its first request for support in accordance with a memo of understanding between the Navy supervisor of salvage and the National Transportation Safety Board. Under that agreement, a pinger locator system, side scan sonar mapping system, remotely operated vehicle, salvage ship (*USS Grasp*), search vessel (*MV Pirouette*), and 53 divers were provided initially.

On July 22 the FBI requested a helicopter and non-flying crew chief for the investigation.

U.S. Navy (Gordon Peterson)

Retrieving parts of TWA flight 800 fuselage.

U.S. Navy (Mark M. Reinhard)

The National Guard Bureau coordinated for the Delaware Army National Guard to execute this mission. A forensic anthropologist from the Armed Forces Institute of Pathology was provided to assist with autopsies and identify remains. In addition, the Corps of Engineers furnished a barge to collect drift from the wreckage.

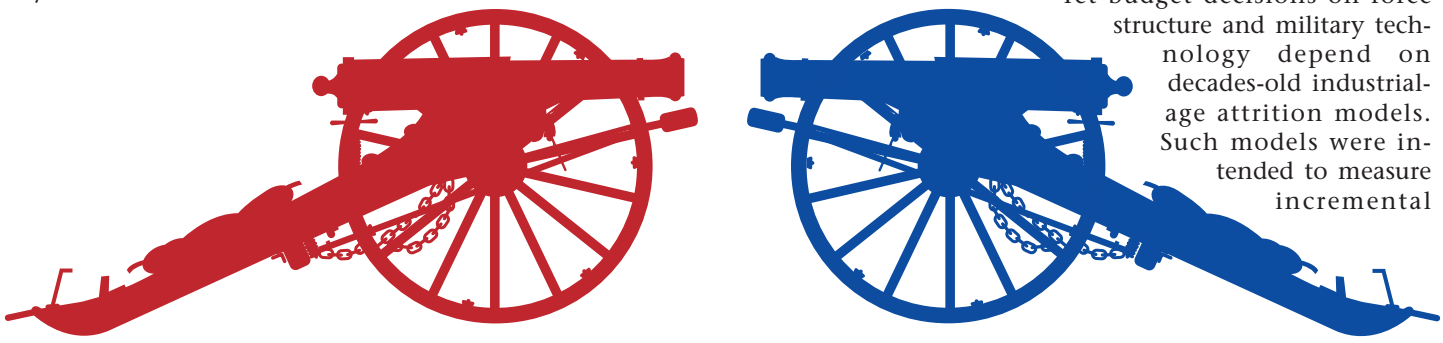
Ultimately, support to the crash site continued to increase, and DOMS staffed and issued an execute order approved by the Secretary of the Army on July 23 which designated the commander in chief, ACOM, as the supported CINC for site operations. He, in turn, tasked the commander in chief, U.S. Atlantic Fleet as supported CINC and directed the establishment of a disaster relief task force to assume operational control. Over the next two months this structure provided extensive support to recovery operations and aided in the eventual recovery of the remains of 213 victims and 95 percent of the aircraft. Navy strength at the site peaked at 740 and included 140 divers.

The Armed Forces are trained and equipped to provide immediate response during disaster and emergency response operations. In fact, in many cases DOD is the only Federal agency that can immediately provide some kinds of support. The military clearly recognizes the importance of this mission; however, there is a price to pay. Time, personnel, training, and funds spent for such support compete with our limited assets. Leaders on all levels must weigh the impact of such missions on their organizations and make the necessary adjustments. Support to the Nation is a demanding mission that the military must continue to plan for and execute. JFQ

The Force-on-Force Model:

An Anachronism in the Information Age

By MAGGIE BELKNAP



If confronted with an enemy sniper in a darkened room would you want more ammunition, a larger caliber weapon, or night vision goggles? Those who make decisions on how to man and equip our forces depend on models that cannot answer this question. Built during the Cold War to respond to concerns over incremental changes in force structure and weaponry, these models are unable to measure the impact of revolutionary advances in information technologies. Born of the industrial age, they are inadequate for the information age. At stake is operations research, a product of the industrial age, and more importantly our national security which depends on this discipline.

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A much promised peace dividend and consensus on the dawn of the information age raised expectations that we could anticipate significant decreases in defense budgets and force structure. While the military has indeed been downsized, this has been a response to budget cuts and the end of the Cold War, not to investments in information technologies. The Armed Forces are smaller, but we have not restructured to realize savings in the same way as the private sector. This reflects the failure of decisionmakers and those operations research analysts who support them to abandon the industrial age force-on-force models of the past.

The information revolution sweeping our lives will also sweep the battlefield of tomorrow. Yet budget decisions on force structure and military technology depend on decades-old industrial-age attrition models. Such models were intended to measure incremental change and not to explore revolutionary advances. The longer decisionmakers take to adapt, the less likely it is that we will attain the security innovations that capitalize on emerging technologies. Moreover, we risk failing to demonstrate the tangible cost benefits associated with information technology.

Changing Models

Knowing why a particular model was built is key to understanding the types of questions it can answer. Generally models were designed to measure the impact of improvements in weapons systems or estimate force structure requirements. Force structure models served a variety of useful purposes during the Cold War when incremental changes in either force structure or modernization occurred. Large contests by land and air forces along the inter-German border or smaller

but more compressed clashes along the 38th parallel in Korea were ideal for conversion into linear models which is why steady state assumptions were acceptable. (But what does war conducted at a steady state look like?) The builders of such models never claimed that they could accurately predict the outcome of combat in terms of casualties or geographical displacement. They simply asserted that they could demonstrate a relative advantage of one force over another or help distinguish between alternatives for force sizing and modernization.

Model building focused on combat forces. Thus many combat support and service support functions were not included at the outset and were added only as an afterthought or—in the case of logistics—modeled by separate simulations and then used as input to combat models. The force-on-force, attrition-based notion of war emphasized kill rates and weapon efficiency factors such as accuracy and circular error probable. In the industrial age this mirrored manufacturing problems of optimizing processing rates and outputs in light of scarce resources. It also supported decisions on which technology advancements in weapons improvements should be explored.

if decision support models are simply retooled they will fail to capture potential innovations

While there have been changes in the models over the past decade none were a result of the end of the Cold War or a commensurate change in national security strategy. One can be attributed to passage of the Goldwater-Nichols Act in 1986 which saw an end to models designed to support service-specific budgets and force structure allocations. TACWAR is a model adopted by the Joint Staff in 1988 that marked the recognition of a need to demonstrate the impact of such decisions in a joint environment. It models land and air components in a single theater-level model. Widely used because it is joint, this model falls short of realizing joint warfare synergies, let alone incorporating enhancements produced by information technology. In fact, it is a low resolution model that is not sophisticated enough to be used as service-specific model. Like its predecessors, TACWAR does not account for much beyond the force-on-force, attrition-type warfare.

At the opposite end of the spectrum, enhancements in computerization and simulation have led to higher resolution models. Precise computer mapping and graphics have made battalion-level models possible, such as Janus which can account for the impact of terrain on troop movements and weapons systems in various sectors of the battlefield. The growing infatuation with Nintendo-like computer graphics known as virtual reality has propelled enhancements in computer models, highlighted by the exact replication of portions of the "hundred-hour war" in time and space using the most advanced computer graphics.

Reengineering War

It is ironic that none of these advancements can measure the impact of the greatest emerging technology on warfare today—information technology. Instead, in aid of better and arguably more user-friendly models, such advancements bury the flawed assumptions of industrial-age, attrition-based warfare under a sophisticated veneer of information-age computer interfaces.

Although C4I is often seen as a force multiplier, we are only beginning to explore its force structure implications.[1] In failing to realize the real benefits of information technology investments we join white-collar workers who have similar trouble identifying processes and measuring output. Many businesses have learned from automation and begun to *reengineer*, which means optimizing a process and automating it, as opposed to installing automation to support an existing process.

This coincides with an apparent divergence on how the military looks at technology. If its purpose is to support warfare as we know it, that is to simply automate it, there are only costs. If, however, there is a tremendous advantage to be harnessed, then we have a revolution together with a reengineering of warfare. Similarly, if decision support models are simply retooled to fit C4I to existing force-on-force, assumption-based models, they will fail to capture potential innovations and commensurate force structure and cost savings.

This sets the stage for civilian and military leadership to direct the analytical community to advance decision support models in two possible directions. The first is to improve current models to incorporate C4I or build new C4I models. The second is to challenge military analysts to apply their skills to support experimentation, exploration, creativity, and innovations in warfare that may provide the basis for the next generation of models.

To illustrate deficiencies in the first course, it is worth noting the hypothesis that "If we have dominant battlefield awareness, we win," as advanced by the former Vice Chairman, Admiral William A. Owens.[2] Attaining this dominance requires enhancements in intelligence, surveillance, and reconnaissance (ISR) and in C4I—neither of which is considered today.[3] But there are several methodologies used to compel models to provide insights on the possible impact.

One approach is to front-load the model based on some gross assumptions by invoking an "efficiency factor" for either side. That is, analysts may multiply weapons effectiveness indicators on one side (but not the other) by some value to express a relative difference between protagonists. This method requires front-end analysis; and it could be argued that it leads to convoluted results.

Another method allows one side to find targets immediately. Combined with old doctrine and battlefield arrays, this results in faster force-on-force wars. Targets are acquired and destroyed faster and with greater precision, mirroring the type of war conducted in the Persian Gulf. Hence the universal acceptance level of the results is supported by real world experience. Such modeling techniques might suggest that dominant battlefield awareness increases ammunition requirements because more targets become available and that ammunition costs may thus increase.

those who continue to use force-on-force models are breaking a fundamental rule

Dominant Battlefield Awareness

But what if this dominance enables us to identify major enemy vulnerabilities? Such issues are beyond the capacity of current models that, for example, cannot simulate targeting and destroy a command headquarters. However, while such a strategy cannot be simulated with models today, it might result in lower ammunition requirements. Finding critical vulnerabilities requires network analysis, which is not beyond the ability of operations research analysts. Many network analysis tools are available but simply have not been used or are not compatible with force-on-force models.

Another method is to employ a "man-in-the-loop," which is much more promising because military strategists decide how to array their capabilities on the battlefield and define some order of battle. Analysts program the computer model accordingly, and it is then run for a specified time or until a certain objective is achieved. Presented with those results, strategists then make their next move, and so on. Although included, strategists cannot truly exercise creativity because they are restricted by the capabilities and assumptions of the models.

Vigilant Warrior provides a situation in which one might ask a "man-in-the-loop" about the value of improving ISR capabilities. Clearly they saved the cost of revisiting Desert Storm. Based on superior intelligence assets, we are able to enforce a strategy in the Persian Gulf today that relies on early warning, which has force implications. Perhaps an investment in technologies to integrate and present information more quickly to the National Command Authorities could have saved the cost of deploying troops in 1994. Investment in processing and integrating information might be compared with such deployment costs. Obviously this kind of analysis goes far beyond force-on-force models. But it also surpasses the "man-in-the-loop" wargames that one might try to support with these models.

The inadequacy of such models with regard to advances in information technology justifies discarding them in favor of new ones. Leaving aside the tremendous time it takes to build a model that is valid and accepted, it is impossible to stay abreast of emerging information technologies that are improving exponentially. Some attempts to model C^4I are only representations of information flow, much like logistics. These are placed over existing force-on-force models and do not model the significance of information capabilities nor the impact of denial of information.

Emergence of C^4I

All these approaches simply layer dominant battlefield awareness, or any information age capability, over old doctrine and battlefield arrays. Models were not designed to identify critical vulnerabilities or exploit them—they can't reinvent *Blitzkrieg*. Once breakthroughs occur military analysts can account for innovations in modeling or build models that simulate such processes, but they cannot find them with models. Old models did not even account for basic synergies realized from combining land and air operations.

These old models provided important analytic tools to support resource allocation decisions during the Cold War. Built without consideration of command, control, and communications they were sufficient for making decisions on weapons systems and force structure in the industrial age. The emergence of C^4I, however, demands a change in the tools used to support decisionmaking on weapons systems and force structure. And the issues go beyond weapons and force structure to systems integration and process changes that might yield force structure changes.

Practitioners of operations research should instantly recognize that those who continue to use force-on-force models are breaking a fundamental rule: don't make the problem fit the model. This unfortunately describes attempts by analysts to get results through workarounds and tinkering with current models. Armed with only force-on-force models, they must ultimately reduce every question posed to fit a force-on-force analysis.

In relative terms the next century is here. But clearly current models cannot be retooled nor

U.S. Air Force (Marlene Barry)

Deploying for Vigilant Warrior.

quickly rebuilt to address the new issues that it will pose. Military leaders must direct the analytical community to develop efforts which support reengineering warfare rather than automating it. They must envision how strategy and doctrine would change as a result of new capabilities and structure the force accordingly.

If strategy is information- or knowledge-based, force enhancements might be measured in terms of how such capabilities are leveraged. For example, restructuring initiatives that eliminate layers of command and control, that simply filter information with no value added, would be such an enhancement. These capabilities enhancements might be measured in terms of how successfully they integrate or speed information processing.

From a cognitive perspective, future developments might focus on presenting commanders with the right information in an understandable and usable format. Psychologically, one might ask if the American people might be inclined to use unmanned autonomous vehicles and cruise missiles to lessen the chance of putting our forces in harm's way.

Tools Are Not Solutions

Operations research analysts cannot answer every question. But they might gather groups of specialists from various fields to examine the future of warfare. This would include evaluating the environment of the battlefield of tomorrow, how it will be changed by advances in information technology, how the national strategy must change, and how war can be revolutionized to support that strategy. In addition to the usual lineup of experts in national and military strategy, this group must include cultural, economic, and intelligence specialists, computer experts, systems engineers, network analysts, and social scientists.

This approach to problem solving is not new. Operations research traces its roots to World War II when diverse groups of scientists teamed up to solve complex problems. Many recognized the synergism in bringing diverse expertise and views to problem solving, so the practice spread. The success of the methodology and models that evolved is still widely recognized in the industrial sector. This discipline incorporates a common menu of techniques and mathematical models that have been developed over the years. But as operations research textbooks warn, these are tools, not solutions to problems. One of the most fundamental errors that any operations research analyst can commit is to apply the wrong model to a problem.

The essence of operations research is creativity and innovation—not employing models like cook book recipes. Its tools are useful in studying a wide range of problems. But often there are no appropriate models for particular problems. That is an opportunity for both the art and science of operations research to grow, to develop new models. Determining the impact of the revolution in information technology on warfare is one such opportunity.

Failure to redirect the analytical community toward reengineering warfare misses the chance for military strategists and operations research analysts to realize their potential. Yet the practice of making incremental changes in strategy and modeling may continue unnoticed. If strategists do not consider the consequences of C^4I beyond the safety of model-based wargames, tinkering with old ideas will be reflected in reworking models that support them. Contractors will support expensive computer-based models by investing in graphic interfaces and resolution improvements that give the impression that the models themselves have been modernized. But the opportunity will be lost to exercise the core competencies of both military professionals and operations research analysts. Military professionals will fail to apply their art in a new era while operations research analysts will fail to fulfill the potential of their art and science envisioned a half century ago. JFQ

NOTES

[1] The Army is exploring how to adapt with a three-phase training and learning program task force advanced warfighting experiment using a digitally equipped experimental force. The plan is briefly outlined in an Army pamphlet entitled *Force XXI: America's Army of the 21st Century*, pp. 23–29.

[2] William A. Owens, open letter to the Military Operations Research Society, December 1, 1994.

[3] William A. Owens, "The Emerging System of Systems," *Proceedings*, vol. 121, no. 5 (May 1995), p. 37.

HH–3s.

DOD

Operation Kingpin—Success or Failure?

By WILLIAM C. THOMAS

One of the more controversial operations during the Vietnam War did not involve defoliants or bombing remote hamlets; rather it was an attempt to rescue 54 Americans held captive in the north. Operation Kingpin was the raid to retrieve prisoners of war (POWs) from a camp located near Hanoi at a place called Son Tay. This effort is best remembered because the captives had been moved prior to the raid and the camp was found to be empty. But despite failing to accomplish the objective, this mission offers some valuable lessons in jointness.

Kingpin proved that a joint mission could be well planned, trained, and executed—lessons forgotten ten years later in Eagle Claw, the aborted mission to rescue American captives from Iran. The raid on Son Tay demonstrated that service rivalries could be effectively overcome to organize an appropriate force, sort out equipment interoperability problems, conduct proper training, and complete contingency planning to execute a mission despite the inevitable friction of war.

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The Mission

Most American POWs were held in Hanoi, whereas Son Tay was located 23 miles from the North Vietnamese capital. Using various intelligence sources, the United States discovered the site of the camp in May 1970 and identified many of the captives.[1] A plan then was developed to insert 56 members of Special Forces to perform a rescue. They would be delivered at night by Air Force helicopters, spend less than 30 minutes on the ground, and return with the POWs. The mission would involve the coordinated efforts of Air Force and Army special operations units as well as naval aviation forces who conducted a diversionary attack over Hanoi.

Intelligence assets monitored the camp during the six months of planning and preparation. Reconnaissance indicated it had been emptied but could not confirm this fact by other sources. Photos taken by SR–71s and Buffalo Hunter drones indicated it was vacated sometime after June 6. POWs later reported that they were moved on July 14.[2] The camp showed signs of limited activity but there was no way of determining if the Americans had returned. Although analysts prefer to have at least two independent sources before relying on information, mission preparations proceeded. However, two days before the raid a source inside the North Vietnamese government indicated that the prisoners had been moved to another camp.[3]

There remains speculation on why the POWs were moved. Some believe it was because of possible flooding resulting from a CIA operation known as "Popeye" which seeded rain clouds to create adverse weather in North Vietnam. Another possibility is that the camp was under repair or being expanded. The raiders found lumber, cement, and tools. Whatever the reason, the command staff decided to go ahead with the mission, stating that it would be "unforgivable" to not go in after all the training and preparation only to find out later that the POWs had been there.

planners court disaster when they cater to the services by enlarging their roles

Special Forces personnel would be transported via Air Force HH–53 and HH–3 helicopters from Udorn with MC–130 Combat Talon aircraft from Tahkli serving as pathfinders (see map). Close air support would be provided by A–1 Skyraiders, considered too slow by the conventional Air Force but perfect by air commandos. While the Navy staged a diversionary attack over Hanoi to draw attention from the camp (they had to drop flares since bombing missions over the north were forbidden at this time), helicopters would fly in and deposit the team at Son Tay. The prison assault team, led by Captain Dick Meadows, would crash land inside the prison aboard an HH–3. The small helicopter would be abandoned rather than risk having it shot down while departing and falling on the troops below. As the assault team moved quickly into the cells another group would create an escape route by blowing a hole through the prison wall. A third team would defend the raiders from enemy response. Once the POWs were rounded up the helicopters would return from a nearby landing zone, pick up the raiders and POWs, and return to Thailand. The teams planned to be on the ground no more than 28 minutes (this estimate was off by only 15 seconds).[4]

Building a Force

Concerns arose during planning for the raid over the size of the force as estimates of 350 personnel were proposed. This was not unusual since the services tend to exaggerate their role by increasing their contributions. In this case, however, planning was done primarily by operators rather than by the Joint Chiefs whose exclusion reduced service parochialism.

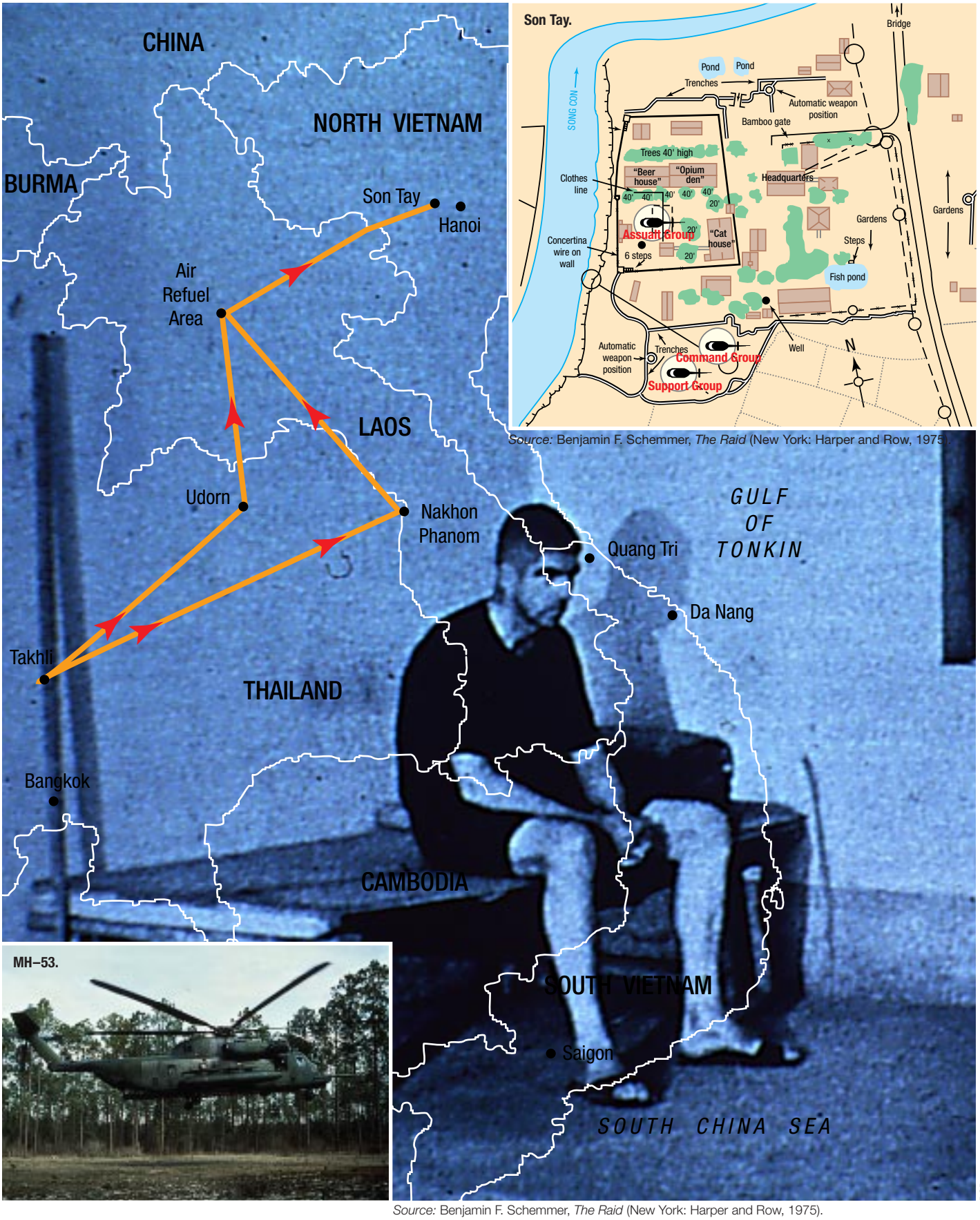
A special operations team of Army and Air Force personnel was formed over Marine Corps objections. Selection was not based on rank or service but rather on experience in Southeast Asia or operational specialty. The Army and Air Force were chosen based on mission needs: the ability to move safely and strike quickly. Special Forces were best suited for the mission, which required a small unit that could discriminately apply concentrated firepower. Air Force special operations pilots had the most experience in low-level night insertion and extraction missions. By combining technical expertise with regional familiarity and not insisting that every service be used the planners developed a force well suited to the objectives.

The lesson is that force structure must be determined by mission goals and the constraints inherent in an operation. If that means using every service, then they should be used. If not, don't. Planners court disaster when they cater to the services by enlarging their roles and ultimately their budgets. When JCS planned Eagle Claw ten years later this lesson was forgotten. According to one senior observer, "there was a general feeling that it would be nice if everyone had a piece of the pie."[5] That general feeling can lead to putting the wrong people into a job.

Interoperability

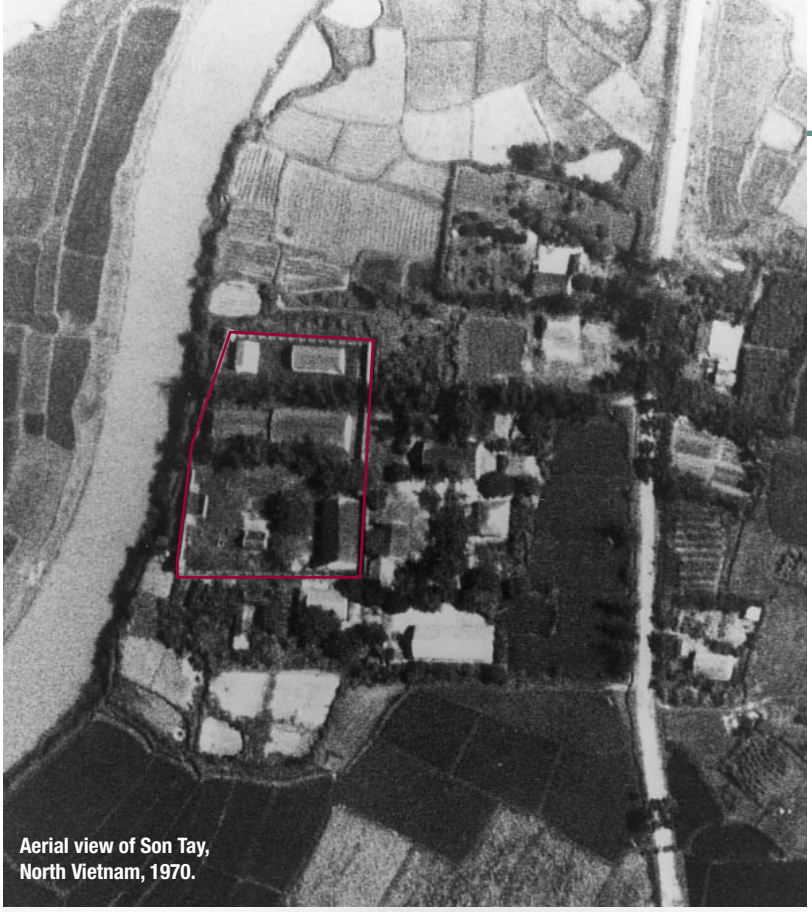
Today a major problem facing joint operations is interoperability. Too often services find that their equipment is not compatible when they must work together. Each has its own acquisition process even though the Office of the Secretary of Defense compiles a consolidated budget request. Despite the scrutiny provided by the Joint Requirements Oversight Council, the services typically buy equipment only with their own purposes in mind. This will change—but slowly. Meanwhile the services must overcome this problem. Kingpin proved that it can be done.

The most significant problems challenging mission planners involved the resources of only one service. Four types of aircraft were needed in direct support of the ground force. An HH–3 would carry one team while HH–53s took in the remaining Special Forces. Because the helicopters lacked navigation equipment to find Son Tay at night, two MC–130s would serve as pathfinders. Close air support would be provided by A–1s.



Source: Benjamin F. Schemmer, *The Raid* (New York: Harper and Row, 1975).

DOD



Aerial view of Son Tay, North Vietnam, 1970.

U.S. Air Force

Model of prison used as training aid.

U.S. Air Force

The problem was speed because the HH–3 was the slowest aircraft. That made it difficult for MC–130s; when flying just over their stall speed they were still ten knots faster than the HH–3. Since MC–130s were navigating for the helicopters, it would not be acceptable for the slowest aircraft to lag behind. A–1s were even faster and would be over the target area long before the raiders arrived thereby increasing their exposure. A way had to be found to keep the aircraft together.

if the services train by themselves the required synergy will not be there

Although some might have proclaimed the obstacle unsolvable and the mission impossible, Kingpin planners recognized that most problems can be overcome through innovation and creative thinking. MC–130s would fly just above their stall speed with the HH–3 "drafting" behind them. By flying in the slipstream of larger aircraft the HH–3 could gain the ten knots needed to keep up. A–1s would fly large S-turns along the flight path to keep from getting too far ahead. This plan allowed all the aircraft to arrive at Son Tay together.

Despite the fact that the aircraft came from one service the lesson applies to joint operations. Mission requirements will dictate that certain forces be used. They may not be able to immediately integrate. Their equipment may be incompatible or their skills may not be complementary. Instead of making the choice between accepting a bad situation or canceling a mission, planners must find the means to remedy such problems. The answer may be obvious or require innovation, but again this lesson was forgotten in Eagle Claw when an array of forces from all services was employed. They did not have the right radios. Rather than ensuring that the widely dispersed personnel could communicate in a secure fashion, the leadership accepted a bad situation and hoped for the best. It was this lack of communication that contributed to mission failure.

Proper Training

The mission validated the fact that joint training must be accomplished before an operation. It is difficult to train as a single service and then to fight jointly; forces need to train as they fight. Once a plan is developed, if the services train by themselves the required synergy will not be there. Fortunately this was not a problem in Kingpin. The raiding team trained at Eglin Air Force Base using a full-scale mockup of the Son Tay camp built from reconnaissance photos. They ran dry-fire exercises during the day, then at night, followed by daytime live-fire exercises and finally three full rehearsals at night. Helicopter crews practiced with MC–130s and trained at the mockup camp. Over 150 practice sessions were run. Troops thus got used to being a team and better understood the needs and capabilities of other services.

Joint training is critical because each service has needs that can only be met by a supporting service. When the Air Force provides close air support or insertion and extraction for Army units, pilots have to know how the Army fights to support the troops on the ground. On the other hand, if Army planners are depending on Air Force support they must understand Air Force capabilities. Fortunately, the special operators involved in Kingpin had worked with the other services, and the planning staff included both Army and Air Force representatives.

Eagle Claw planners forgot this critical lesson ten years later. The senior leadership as well as ad hoc units formed for the mission had limited joint experience. In six months of preparations not one rehearsal integrated all task force components. Knowing the capabilities of other services leads to planning that allows various elements to support and complement each other. Moreover, such an awareness coupled with integrated training also enables operators to develop responses to unexpected contingencies. The better the preparation, the better the ability to react if things don't go according to plan.

Preparing for Contingencies

First planned for late October, Kingpin was postponed for a month by the national security adviser to the President, Henry Kissinger. The unexpected delay proved essential for the raiders. With no other taskings and not wanting the team to lose its edge, planners began asking "what if?" It was during this period that they planned and trained for a range of contingencies.

The planners anticipated various possibilities. What if a helicopter was lost? What if North Vietnamese reinforcements arrived? What if the prisoners were unable to walk or were too scared to leave their cells? While it is impossible in such situations to think of everything, operators will at least be in the frame of mind to find a solution when something goes wrong. This turned out to be critical once Kingpin was executed.

The helicopter carrying Colonel Arthur D. ("Bull") Simons, the ground forces commander, accidentally landed at another facility 400 yards away. Realizing he and his 21-man team would be out of action until picked up, he radioed the message "option green" which alerted Meadows, who was inside the camp, that he was now in command. Simons and his team were lifted out after a brief fire fight, but once on the ground at the right place he resumed command. The transfer was seamless and the mission was never disrupted despite briefly losing its commander and nearly half the ground forces. If the raiders had not considered unanticipated problems this incident could have spelled disaster for the entire team.

By contrast Eagle Claw demonstrated what occurs when potential problems are not tackled early on. Rather than devising methods for working around obstacles, the planning staff expected to abort the mission if things went wrong. The use of go/no-go abort points was mandated in the original operational requirements.[6] Such a fatalistic approach leads operators to focus on halting a mission rather than resolving problems. As it turned out, the mission was called off when three of eight helicopters were lost because of navigational or mechanical difficulties. The loss of three helicopters was one of the abort thresholds.

The fact that unexpected situations occur highlights the need for effective joint operations. Using two or more services makes the whole greater than the sum of its parts. While there may be some redundancy in such operations, this may free up resources from one service, allowing them to be applied elsewhere and thus enhance economy of force and the ability to respond to problems which arise.

Operation Kingpin is a model of joint planning and operations. Its force structure reflected the politico-military objectives of the mission rather than interservice rivalry. Instead of ignoring equipment incompatibilities, planners found ways around them. The services conducted realistic training that allowed them to resolve problems before rather than during the operation. Finally, the raiders were ready for unanticipated issues that arise in all missions. Was the operation successful? If one is asking if it met its objectives the answer is no. Despite intelligence, planning, and training not one POW was rescued. But if one is inquiring whether this was a joint mission that reflects realistic planning, appropriate force structure, quality training, and effective use of ground and air assets, the answer must be an emphatic yes. JFQ

NOTES

[1] Operational aspects are discussed in Benjamin F. Schemmer, *The Raid* (New York: Harper and Row, 1976), p. 56.

[2] Interview with Col Henry P. Fowler, Jr., USAF (Ret.), one of the Son Tay captives, January 29, 1996. Interview with MAJ Richard J. Meadows, USA (Ret.), May 5, 1995. The assault force was led by Meadows, who searched each cell looking for prisoners.

[3] Speculation continues over whether human intelligence verified that the prisoners were gone, and senior members of the joint task group refused to either confirm or deny it. Schemmer recounts an exchange which involved the Chairman, ADM Thomas H. Moorer, USN; the director of the Defense Intelligence Agency, LTG Donald V. Bennett, USA; and the special assistant for counterinsurgency and special activities on the Joint Staff, BG Donald D. Blackburn, USA. According to Schemmer they discussed the recent intelligence and recommended that the mission continue. Other sources also believe that actual verification was received.

[4] The summary of the plan is consolidated from Benjamin Kraljev, "The Son Tay Raid," *Airlift Operations Review* (January 1981), pp. 27–31, and Schemmer, *The Raid*.

[5] John E. Valliere, "Disaster at Desert One: Catalyst for Change," *Parameters*, vol. 22, no. 3 (Autumn 1992), p. 78.

[6] Robert L. Earl, "A Matter of Principle," *Proceedings*, vol. 109, no. 2 (February 1983), p. 30.

CH–46 moving cargo from *USS John Paul Jones.*

U.S. Navy (Rodger W. Dellinger)

In Search of Focused Logistics

By JOHN J. CUSICK *and* DONALD C. PIPP

Designed as an operational template to guide the Armed Forces, *Joint Vision 2010* has four major tenets: dominant maneuver, precision engagement, full dimensional protection, and focused logistics. A judicious application of technological innovation and information superiority is billed as the critical enablers of this process. Any initiative of this breadth is bound to be controversial. Critics have raised various points: that maneuver, strike, protection, and logistics are hardly new operational concepts and that technology is stressed over the human element. But our objectives remain fundamentally the same. What will change is how they will be achieved.

Soldiers, sailors, marines, and airmen fight and win wars, not technology. All the technological sophistication in the world is of little value without high quality and trained people. However, technology enables the warfighter to accomplish the mission with increased precision, lethality, and at a human, political, and economic cost we can afford. Technology goes a

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long way toward improving the quality of life of warfighters by accomplishing tasks more effectively and efficiently, thus allowing them to "work smarter not harder." Focused logistics, a full partner in *JV 2010*, takes a basic issue and seeks the best way to provide combat support to the warfighter. The most often quoted reasons for developing focused logistics are downsizing, changing threat environment, technology, and political and fiscal realities. Attracting little attention is the fact that logisticians in all services are dissatisfied with the level of support provided to warfighters. They know they can be more effective and efficient. They have the opportunity and high caliber people to make a genuinely evolutionary change in how they do business.

Air Force lean logistics and Army velocity management programs are literal springboards for quantum improvements in logistics. By accelerating movement of assets through transportation and repair cycles, support has been improved at less cost and confidence is building that the system will work when required. Advancements in strategic lift—sea and air—will go a long way toward providing deployability, a vital element of our military strategy. Senior leadership has successfully argued for the acquisition of C–17 aircraft and roll-on/roll-off ships. The air mobility express and integrated use of commercial carriers by the Air Force are illustrations of innovations that provide unprecedented strategic force projection capability. While we have not yet finalized the elements of joint reception, staging, onward movement, and integration or of theater distribution or joint logistics command and control, there is unanimous agreement on the necessity of more clearly defining roles and responsibilities in the area of force projection. Thus near-term resolution is probable.

the logistics footprint of the future will strike a more precise balance

Supporting the entire network from the source of supply to point of need will be the global combat support system (GCSS). It is intended to do for logisticians what the global command and control system does for operators. GCSS will facilitate access to critical resource data anytime and anywhere in the world without specific hardware. Developments in joint total asset visibility and in-transit visibility will culminate in quantum leaps in the effectiveness and efficiency of logistics support to warfighters by providing critical resource information throughout strategic, operational, and tactical levels of any military operation.

Each service has a way of ensuring logistics connectivity and resupply to deployed forces. Problems often arise where these methods not only vary among the services but sometimes from unit to unit. GCSS will provide logisticians much-needed visibility of critical resources in factories and wholesale locations, in transit to and from the theater, and in storage at units both in and out of theater. Multiple requisitioning of an item in the hope that at least one will arrive when needed will become a thing of the past. The logistics footprint of the future will strike a more precise balance: just in time and just in case = just enough.

New developments in automated information technology will provide automated tracking of assets worldwide. Incorporating requirements for this technology in the acquisition process could offer global visibility of assets throughout their life cycle. These efforts are noble indeed but are of little consequence unless conscious efforts are made to monitor progress through to completion.

The Logistics Directorate (J-4), Joint Staff, is developing a focused logistics action plan to identify initiatives to improve support for the warfighter. Focused logistics takes its cue from two processes: the joint warfighting capabilities assessment (JWCA) and the joint monthly readiness review (JMRR). CINCs and the services articulate issues that they feel have adverse impacts on their capabilities through these processes. While the programs require intensive management, they have already proven their worth as a vehicle for channeling and resolving joint issues. They have resulted in considerable cost savings, improved support to CINCs, contributed to our goal of being the premier deployer in the world, and made significant contributions to joint logistics operations. While JWCA/JMRR is a key element of the process it is by no means the only one.

Strategic direction found in the National Military Strategy, Joint Strategy Review, *JV 2010*, Quadrennial Defense Review, and other planning guidance form a baseline for developing the focused logistics plan. Meanwhile service vision statements and strategic logistics plans of the CINCs, services, and Office of the Secretary of Defense were reviewed for common themes and innovative concepts with the intent of drawing on the many talents of strategic planners across the services. Other sources included the exceptional work done by the Defense Science Board, think tanks, and Joint Warfighting Center. The target date for publishing the plan is this summer after extensive coordination with CINCs and the services.

Evolving concepts influence various dimensions of the operating environment, and focused logistics is no exception. It has major implications for doctrine, organization, training, material, leadership, and personnel. Not surprisingly,

U.S. Air Force (John E. Lasky)

Pushing cargo onto C–17 Globemaster III at Rhein-Main.

GCSS forms a common thread through these areas. The quality of life benefits derived from focused logistics are boundless: computer based training, reliable modeling and simulations, state of the art decision tools, medical readiness, asset visibility, smart card technology, and estimates of the extent to which industry can provide logistics support. Logistics organizations will be streamlined as the logistics footprint is adjusted and more progress is made in areas such as logistics command and control and theater distribution. Logistics doctrine is being reviewed and modified to keep pace with rapid developments and to provide overarching guidance regarding traditional as well as developing capabilities.

The focused logistics plan will be a concise publication of joint logistics issues of highest concern to CINCs and the services as identified in the JWCA process. It will provide logisticians with a concise overview of the principal issues and projects under development on behalf of the joint logistics community. In addition, it will furnish metrics for programs identified to the extent possible. The plan will be a think piece for unified commands and the services in either developing or reviewing various strategic logistics plans.

The focused logistics plan will be a living document and as such will be subject to change. Its utility will not be judged by how many pages or graphs are produced, but by validated progress in identified programs. Focused logistics is not the latest fad to be encountered in the introduction of some new regime. It is a dynamic plan of action as well as a state of mind that we must sustain throughout the joint logistics community for combat support to the warfighter. JFQ

USS George Washington and *USNS Yukon*.

A sound logistic plan is the foundation upon which a war operation should be based. If the necessary minimum of logistic support cannot be given to the combatant forces involved, the operation may fail, or at best be only partially successful.

—Admiral Raymond A. Spruance[1]

U.S. Navy (Jim Vidrine)

Review Criteria for the **Logistic Plan**

By KEVIN R. WHEELOCK

When logistics cannot support an operation all else becomes irrelevant.[2] But despite the critical role of logistics, joint doctrine does not provide commanders with review criteria to evaluate the logistic plan. Joint doctrine, however, does give combatant commanders a hierarchy of considerations for the operation plan. The principles of war offer broad guidance for the concept development phase. Operation checklists identify lesser but not insignificant issues that require attention during the execution phase. Between these two extremes, doctrine contributes two sets of mid-level standards: operational considerations and operation plan review criteria. Operational considerations address ends, ways, means, and risks.[3] For instance, commanders should determine if military conditions produced in operational theaters

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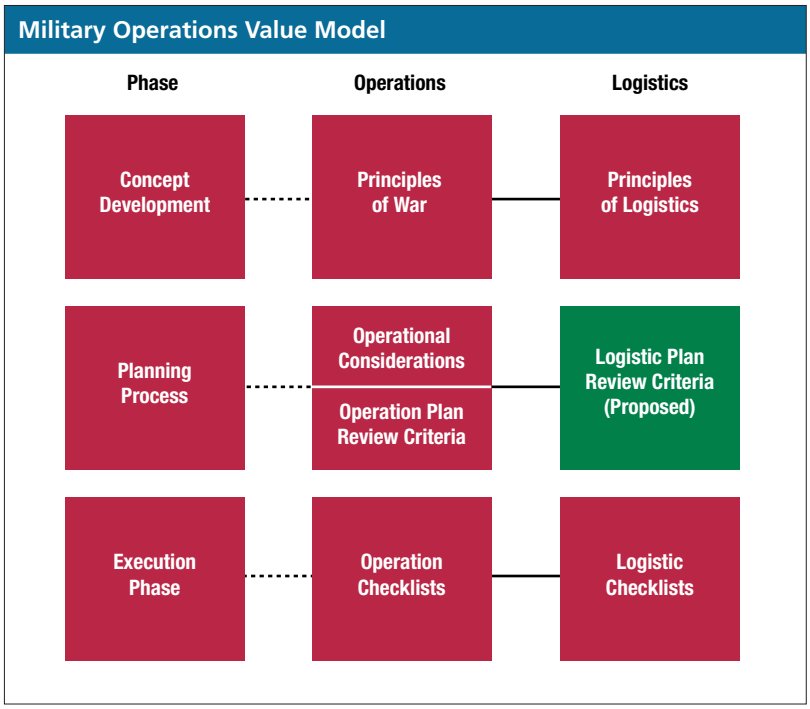


can achieve the strategic goal (ends) and if the sequence of actions is likely to create the conditions (ways). Using the operation plan review criteria commanders evaluate plans for their adequacy, feasibility, acceptability, and compliance with joint doctrine.[4] Commanders must be wary of a proposed plan that does not satisfy both operational considerations and the review criteria.

Combatant commanders do not possess comparable mid-level criteria for the logistic plan. The library of joint publications provides principles of logistics and logistic checklists. Between the principles and checklists one would expect review criteria for the logistic plan, a short list with probing questions to determine how well logistics will support a military operation. But no such criteria exist. Commanders will have more confidence in an operation if they can evaluate the logistic plan against a separate set of criteria rooted in principles of logistics.

commanders should not expect logisticians to ignore resource constraints

Review Criteria

The proposed review criteria have four distinct characteristics. First, they define the limits of the logistic system and available resources. In delineating the system they defuse the inherent tension between planners and logisticians. Planners must be encouraged to adopt an unconstrained vision and develop an operation plan that achieves strategic objectives dictated by higher authorities. The plan designed with such a vision places tremendous demands on the logistic system. Tension arises when logisticians compare an operation plan against the capabilities of the logistic system and decide that the plan may not be supportable. As Joint Pub 4-0 explains, at that point planners and logisticians have reached an operations-logistics gap. To integrate operational intentions with logistic capabilities commanders must bridge it and either lobby for more resources or pare down the plan. Resolution is imperative. It is a basic tenet of joint doctrine that an operation plan cannot "break" the logistic concept without sacrificing the operation itself.

Logistics is inherently a constraint. Henry Eccles once defined it as "military economics" wherein all resources are finite. Elsewhere he remarked, "At the strategic level economic forces limit our ability to create combat forces; operational logistic factors limit our ability to employ our combat forces."[5] Combatant commanders should thus use logistic plan review criteria to determine the limits of the logistic system and where an operations-logistics gap may exist.

Second, the review criteria allow information to be managed by exception. Once aware that logisticians are resource-constrained and that review criteria seek to identify the limits of available resources, commanders should not expect logisticians to ignore resource constraints. Instead logisticians will provide exceptions that do not meet criteria. Candid answers reduce the information for commanders to matters that demand their attention.

Third, these criteria fill the void previously identified between the principles of logistics and the logistic checklists. Finally, they have universal application. Their interpretation depends upon the particular circumstances surrounding an operation and service perspectives of both combatant commanders and their subordinate logisticians.

Responsiveness

The first criterion is that the plan must be *responsive* to force needs. Joint Pub 4-0 advises that responsiveness means having the right support at the right place at the right time. Despite its limitations, a logistic system that answers the needs of combat forces will allow them to reach their full potential. To be responsive logisticians must anticipate a range of requirements. Commanders may need logistic mobility to support advancing forces, flexibility to sustain expanding forces, or simply heroics to reconstitute exhausted forces. In response logisticians may apply three concepts of operational art: the arrangement of operations, logistic discipline, and synchronization.

C–5 delivering supplies during Southern Watch.

DOD (Frank Rizzo)

How well a logistic system responds to the demands of the arrangement of operations will determine the success of phasing, the branches and sequels, and ultimately the timing, tempo, and momentum of an operation. Since the outcome of any phase is uncertain, each has branches and/or sequels of its own. To be responsive logisticians must marshal logistic support accordingly for each phase and all possible branches and sequels. Anticipating such prospects, they may ascertain that the logistic system cannot accommodate the unique demands for a particular branch or sequel. Time and distance factors or availability of critical items may limit support.

The calculus of logistic support is further complicated by the uncertainty arising when one phase transitions to the next. How quickly can the system respond? For instance, phases may be sequential or concurrent. If in the fog of war phases planned as sequential become concurrent, logistic needs will multiply across the support spectrum. During the development of a response to the first criterion, logisticians may find that support is impossible if planned sequential operations (logistically supportable) become concurrent (and perhaps insupportable).

The Logistic Snowball

Responsiveness is a hostage to logistic discipline. Since transport, supplies, and logistic personnel will always be limited, they must be distributed to best meet the requirements of combat forces and the arrangement of operations. Logistic discipline promotes economy, efficiency, and effectiveness. But its absence can ultimately create a logistic snowball, "a huge accumulation of slush [that] obscures the hard core of essential combat support."[6] If combat or logistic resources are not allocated appropriately, additional resources must be expended to reallocate them to

combat forces in need. Expediting material consumes time and other resources to pinpoint and move a handful of critical supplies. A logistic system that is not disciplined and must consume additional resources to overcome the logistic snowball cannot respond as well to the operational needs of a commander.

Logisticians must be sensitive to synchronization and its associated demands for responsive logistic support. Synchronization suggests there is a decisive time and place where combat forces will produce maximum relative combat power against enemy forces. Unfortunately, this poses a dilemma. Achieving maximum relative combat power in a synchronized maneuver, combat forces will simultaneously generate the greatest logistical demands for sustainment. At the peak of battle resource availability will be at a premium. Resources needed to schedule, arrange, transport, and distribute supplies may not be readily available or could be obstructed by the proximity of combat. Thus synchronization may bring combat forces to their culmination point before the logistic system can resupply them. A system that does not resupply before the culminating point is unresponsive.

logisticians will encounter great difficulties in supporting forcible entries

General Walter Bedell Smith, USA, described the difficulty of coordinating logistics with the movement of combat forces. "It is no great matter to change tactical plans in a hurry and to send troops off in new directions. But adjusting supply plans to the altered tactical scheme is far more difficult."[7] This challenge does not diminish the need for logistic support to be responsive to the demands generated by the arrangement of operations and synchronization. Combat forces that do not receive the right support at the right place at the right time may be placed in grave danger. Thus, as Joint Pub 4-0 describes, responsiveness is the most important of the seven principles of logistics and the centerpiece of the first logistic plan review criterion.

Sustainment

The second criterion is that the plan should *sustain* the force. The concepts of sustainability and sustainment appear throughout joint doctrine. Sustainment is pivotal to operational logistics,[8] and sustainment planning is one of the five pillars of joint operation planning.[9] In addition, it is a principle of logistics that can be measured in terms of "availability" or "days of support."

Operational art provides a myriad of issues to consider regarding the sustainment of combat forces. For instance, logisticians will encounter great difficulties in supporting troops that conduct forcible entries into immature theaters. Light forces with limited supplies are inserted initially and their success often depends upon prompt arrival of properly balanced combat and support forces. If operations security is critical, combatant commanders may delay follow-on logistic preparations to conceal operational intentions.

In an immature theater logistic intelligence is required to determine the extent of in-country resources. Absent host nation support logisticians must develop an infrastructure to support the forces. They must be flexible and balance a myriad of issues, including survivability of the logistic system, needs of expanding forces, and avoidance of bottlenecks.[10] Viewing a logistics system as a critical vulnerability, an enemy may attack it and its sustainment capabilities. Operations and logistics must be closely coordinated to ensure survivability of such systems.

According to Eccles, "Logistics is the creation and sustained support of combat forces and weapons. Its objective is maximum sustained combat effectiveness."[11] Logistics may even dictate the options available to commanders when forcibly entering an immature theater. The following is a description of planning for Operation Overlord:

Logistics was greatly responsible for the preference of American military chiefs for a cross-Channel attack for the main effort as opposed to a Mediterranean or other approach on the Continent. . . . Logistics dominated the definition of objectives, the choice of landing sites, the size of the assault force, and plans for building up the initial forces and pushing inland.[12]

Sustainment of forces ashore was critical because "the men who planned Operation Overlord were well aware that the success of an eventual Allied invasion of Europe would depend above all on their ability to feed in troops and equipment at a higher rate than the enemy."[13] Regardless of the theater (mature or immature), type of operation (forcible or permissive entry), or type of warfare (attrition or maneuver, conventional or special operations), sustainability and sustainment are the crux of successful military operations and of the second review criterion.

Logistic Culminating Points

The third criterion is determining the *logistic culminating points*. Joint Pub 3-0 indicates that logistics fixes the operational reach of combat forces—the distance over which military power can be concentrated and employed decisively. It can extend operational reach by forward basing, transport, effective lines of communication, and throughput of supplies. It also dictates the

Landing ships in Italy, 1944.

U.S. Army

characteristics of operational reach, including the size of combat forces, depth of attack, and speed of advance. With operational reach combat forces can achieve positional advantage relative to the enemy center of gravity. "The ability to maneuver," according to Joint Pub 3-0, "must be a trait not only of combat forces but also of the logistic resources that support them."

Operational reach has a finite range beyond which a logistic system cannot support forces. At that point where the offensive becomes logistically overextended forces encounter the logistic culminating point. Beyond it, offensive combat power no longer sufficiently exceeds that of the defenders to continue the thrust and consequently freedom of action is inhibited. Joint Pub 3-0 provides operational logisticians with a prescription to prevent the arrival of the culminating point:

Synchronization of logistics with combat operations can forestall culmination. . . . At both tactical and operational levels, theater logistic planners forecast the drain on resources associated with conducting operations over extended distance and time. They respond by generating enough military resources at the right times and places to enable their commanders to achieve strategic objectives before reaching their culminating point. If the commanders cannot do so, they should rethink their concept of operations.

More than one logistic culminating point may exist. A short supply of ammunition, fuel, or some commodity may create its own. Logisticians must identify such points to combatant commanders. Otherwise, past any culminating point logistics starts to command the commanders.

Operational Risks

The next criterion is *identifying the risks* in executing the plan. Combat operations require prudent risk management. Combatant commanders must weigh the risk associated with movement or positioning of forces against expected benefits and may elect to either reduce that risk or accept it to achieve some objective. Logistic culminating points are the ultimate risk and are accorded their own logistic plan review criterion. But the logistic plan has other risks. The tempo of operations may cause forces to expand faster than what the logistic system can support, bottlenecks in supply distribution, or loss of asset visibility in theater. Moreover, the system is vulnerable to direct and indirect attacks on friendly lines of communication, operational fires directed at friendly logistic infrastructure, political decisions that affect access to host nation support, loss of logistic command and control systems, and the effects of information warfare.

"a real knowledge of supply and movement factors must be the basis of every leader's plan"

In addition to operational risks, the logistic plan may not adhere to the remaining principles of logistics. It may not be flexible, simple, economical, or survivable, and there may be lingering doubts about whether it is attainable. This criterion should identify the risks for commanders who must assess them and plan accordingly. As Sir Archibald Wavell observed, "A real knowledge of supply and movement factors must be the basis of every leader's plan; only then can he know how and when to take risks with those factors, and battles are won only by taking risks."

Meeting the Unexpected

The fifth criterion is that there must be ample resources to *react to unplanned contingencies*. Logisticians can never have sufficient resources to respond to every conceivable contingency. But careful analysis should reveal which requirements are likely and which can and cannot be satisfied. This analysis may persuade commanders to follow a less risky course. Logisticians who can affect operational decisions have mastery over logistics. Equally important, they avoid a course that can create a logistic bottleneck and enslave logisticians, commanders, and forces to logistics.

For example, suppose a commander intends to execute action "A" to initiate battle. It has a highly desired strategic endstate but may generate substantial casualties. The logistician anticipates that they would inundate in-theater medical units and that the additional medical assets required to be flown in would overwhelm the transport and distribution system. He envisions that this logistic bottleneck will develop into a formidable problem. The airlift system from the strategic to tactical theaters would have to adapt to a new and more urgent priority of transporting medical resources. Airlift assets would have to be rescheduled, unloaded, reloaded, flown into theater, and compete with other missions for material-handling equipment, cargo-handling personnel, warehousing, and distribution. Dedicating such assets to a more robust medical infrastructure leaves fewer to sustain combat forces. In addition, the lead time for other critical nonmedical supplies increases.

Logisticians must inform commanders of the sufficiency of in-theater resources to react to an unplanned contingency, the risk of creating a logistic bottleneck as friendly forces react to this contingency, and the second and third order effects on the sustainment of combat forces.

The logistic plan review criteria provide an agenda for both commanders and logisticians to discuss the merits and hazards of the logistic plan. They define the limits of the logistic system to support an operation beyond which commanders incur additional and possibly unacceptable risks. The criteria are not intended to make logisticians arbiters between the feasible and the infeasible. Nor are logisticians expected to respond recklessly or boast of capabilities the system cannot deliver.

On the other hand, logisticians must be able to convincingly discuss the ability or inability of a logistic system to respond to and sustain combat forces. Fortitude is needed to identify both the culminating points and risks associated with military options. In addition, they must candidly explain to what degree a logistic system can react to unplanned contingencies. Using these criteria to identify limits and risks, the greatest contribution made by logisticians is helping commanders to see the most viable course, isolate its logistic risks, and bridge the operations-logistics gap. Armed with logistic plan review criteria, combatant commanders can quickly identify the critical logistic issues and determine if the logistic plan supports the operation plan. A sound operation plan must have adequate logistic support. As Admiral Spruance reminded us, if combat forces do not receive adequate logistic support operations will suffer and may ultimately fail. JFQ

NOTES

[1] Naval Doctrine Publication 4, *Naval Logistics* (1995), p. 33.

[2] Joint Pub 4-0, *Doctrine for Logistic Support of Joint Operations* (1995), p. II–1.

[3] See Joint Pub 3-0, *Doctrine for Joint Operations* (1995), p. II-3.

[4] Joint Pub 5-0, *Doctrine for Planning Joint Operations* (1995), pp. I-13 through I-14.

[5] Henry E. Eccles, *Logistic Research Notes* (Washington: The George Washington University Logistics Research Project, 1961), p. 3.

[6] Henry E. Eccles, *Military Concepts and Philosophy* (New Brunswick, N.J.: Rutgers University Press, 1965), pp. 83–85.

[7] Walter Bedell Smith, *Eisenhower's Six Great Decisions* (New York: Longmans, Green, and Company, 1956), p. 82.

[8] Operational logistics "encompasses those support activities required to sustain campaigns and major operations," according to FM 100-5, *Operations*, p. 12-3.

[9] The pillars are mobilization, deployment, employment, sustainment, and redeployment planning. See Joint Pub 5-0, p. I-3.

[10] Joint Chiefs of Staff, *Joint Doctrine Capstone and Keystone Primer* (1995), p. 60.

[11] Eccles, *Logistic Research Notes*, p. 22.

[12] James A. Huston, *The Sinews of War: Army Logistics 1775–1953* (Washington: Government Printing Office, 1966), p. 523.

[13] Martin Van Creveld, *Supplying War: Logistics from Wallenstein to Patton* (Cambridge: Cambridge University Press, 1977), p. 206.

General George Scratchley Brown

(1918–1978)

Chief of Staff, U.S. Air Force
Chairman, Joint Chiefs of Staff

VITA

Born in Montclair, New Jersey; graduated from Military Academy (1941); flying school, Pine Bluff and Kelly Field (1941–42); B–24 pilot, 344th and 329th Bombardment Squadrons (1941–42); 93d Bombardment Group, Libya (1943–44); 2d Bombardment Division, England (1944–45); Army Air Force Training Command (1945–46); Air Defense Command/Continental Air Command (1945–50); commander, 62d Troop Carrier Group (1950–51); commander, 56th Fighter Interceptor Wing and 4708th Defense Wing (1951–52); assistant director and director of operations, Fifth Air Force, Korea (1952–53); commander, 3525th Pilot Training Wing (1953–56); student, National War College (1956–57); executive assistant to chief of staff of the Air Force (1957–59); military assistant to Deputy Secretary and Secretary of Defense (1959–63); commander, Eastern Transport Air Force (1963–64); commander, Joint Task Force II (1964–66); assistant to Chairman, Joint Chiefs of Staff (1966–68); commander, Seventh Air Force, and deputy commander for air operations, Military Assistance Command, Vietnam (1968–70); commander, Air Force Systems Command (1970–73); chief of staff of the Air Force (1973–74); Chairman, Joint Chiefs of Staff (1974–78); died in Washington.

U.S. Air Force Art Collection

Portrait by Maxine McCaffrey.

The American military has no separate life of its own. It is not an end in itself, but simply a *means* to the end of protecting and preserving our national security. In the final analysis, it is the American people who determine our national goals and objectives, including the defense and security of our Nation. The Armed Forces are the *instruments* of the people. They are constituted and supported by the elected representatives of the people, and serve to achieve national goals.

—Armed Forces Day address by George S. Brown, delivered in Phoenix, Arizona (May 15, 1975)

Doctrine

JOINT DOCTRINE WORKING PARTY

The 19th meeting of the joint doctrine working party (JDWP) was hosted by the Joint Warfighting Center at Fort Monroe on April 1–2. Attended by representatives of unified commands, services, Joint Staff, and doctrine development centers, the meeting was briefed on joint doctrine proposals and approved the following decisions:

- cancel Joint Pub 3-09.2, *Joint Tactics, Techniques, and Procedures* [JTTP] *for Ground Radar Beacon Operations*
- cancel Joint Pub 1-01.2, *Joint Electronic Library Users Guide*
- conduct an early revision of Joint Pub 4-01.5, *JTTP for Water Terminal Operations*, to include the single port manager concept
- consider expanding the concept of operational maneuver during the revision of Joint Pub 3-0, *Doctrine for Joint Operations*
- include the concept of consequence management in Joint Pub 3-07.6, *JTTP for Foreign Humanitarian Assistance*, and Joint Pub 3-07.7, *JTTP for Domestic Support Operations*
- develop a JTTP publication for legal support to military operations
- include post-hostilities guidance in Joint Pubs 3-0, 3-07.3, 3-57, 5-0, 5-00.1, and 5-00.2.

In other areas, JDWP agreed that the joint doctrine electronic information system should be recommended to the Chairman as a means of reorganizing the joint doctrine hierarchy. A series of enhancements to the joint doctrine development system were approved to include posting changes on the World Wide Web, using the Joint Doctrine Web Site to staff draft pubs, and making combatant commands part of the process of coordinating final versions of joint pubs.

The next JDWP meeting will held on October 28–29, 1997. JFQ

Education

NONRESIDENT PME

The College of Continuing Education (CCE) of the Naval War College will conduct its nonresident seminar program at 17 locations during 1996–97. CCE seminar students who complete core courses in strategy and policy, national security decisionmaking, and joint maritime operations receive an diploma and credit for phase 1 of the program for joint education (PJE).

A nonresident program information guide with enrollment details is available by calling (401) 841–6528/DSN 948–6528 or via e-mail at CCENRS@USNWC.EDU. JFQ

NATO COURSE

Officers about to embark on their first NATO staff assignment or who deal with European security affairs are encouraged to enroll in the NATO Staff Officer Orientation Course (NSOOC) offered by the Institute for National Strategic Studies at the National Defense University. Established in 1987 under CJCS Instruction 1210.01, the course is an intense two-week program of instruction which is conducted seven times per year. It is mandatory for all O-4s through O-6s being assigned to NATO headquarters and agencies in Europe and North America.

This course is also useful for both military officers and civilians who serve on the staffs of commands and agencies responsible for NATO/European affairs, including the Joint Staff, Office of the Secretary of Defense, and Department of State. Military attachés assigned to U.S. missions and students en route to staff and war colleges in Europe can also benefit from the program.

The NSOOC staff is also available for "outreach training" through condensed presentations on NATO specifically tailored to customer needs which can be provided to U.S. Government agencies and military organizations including the Reserve components.

For details on upcoming course dates and registration contact: National Defense University, ATTN: NDU–NSS–NSOOC, 300 Fifth Avenue (Bldg. 62), Fort Lesley J. McNair, Washington, D.C. 23019–5055; telephone: (202) 685–3828/DSN 325–3828; Fax: (202) 685–3829/DSN 325–3829; e-mail: buttsj@ndu.edu. JFQ

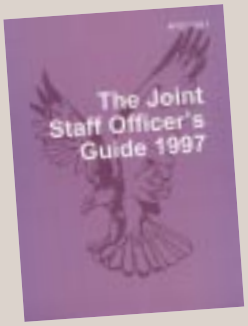
History

JOINT HISTORY ON-LINE

Several titles issued by the Joint History Office are now available on the Joint Doctrine Web Site at http://www.dtic.mil/doctrine. Click on the Joint Electronic Library for the following publications: *The Chairmanship of the Joint Chiefs of Staff*, *The Development of the Base Force*, *The History of the Unified Command Plan*, and *Operation Just Cause*. JFQ

For your reference shelf...

A new edition of Armed Forces Staff College Publication 1, *The Joint Staff Officer's Guide 1997*, is now available. This illustrated 450-page volume provides a comprehensive summary of details on joint planning and execution that cannot be found elsewhere. It presents an overview of the players, processes, and procedures used in the joint arena as well as a wide range of reference material of interest to joint staffs as well as officers in the field and fleet.



AFSC Pub 1 can be found on the Internet (at www.afsc.edu) and also can be accessed through the Joint Electronic Library. Copies are for sale from the Superintendent of Documents at $38.00 each by writing to: U.S. Government Printing Office, Washington, D.C. 20402, or phoning (202) 512–1800 [GPO stock no. 008–020–01422–2]. In addition, it may be purchased from the Defense Automated Printing Service (DAPS) for $14.00 by contacting Don Mruk in San Diego, California, at (619) 556–7187/DSN 526–7187 or Everett Morton in Norfolk, Virginia, at (757) 444–7724/DSN 464–7724 (extension 19). JFQ

1997 CJCS Essay Competition

The 16th annual Chairman of the Joint Chiefs of Staff Strategy Essay Competition was conducted on May 22–23 at the National Defense University. This event challenges students at intermediate and senior colleges to write on some aspect of international security, defense policy, or military affairs, with special emphasis on joint topics.

FIRST PLACE ESSAY

Commander Jeffrey Kline, USN
(National War College)
"*Joint Vision 2010* and Accelerated Cumulative Warfare: The Masters of War Evaluate a Future Strategy"

DISTINGUISHED ESSAYS

Lieutenant Colonel Sean J. Byrne, USA
(Army War College)
"Defense of Sovereignty: Domestic Operations, Legal Precedents, and Institutional Confusion"

Lieutenant Colonel Charles W. Fox, Jr., USA
(Army War College)
"Military Medical Operations in Sub-Saharan Africa: The DOD 'Point of the Spear' for Engagement and Enlargement"

Lieutenant Colonel Gregory Kaufmann, USA
(Industrial College of the Armed Forces)
"Fractured Synthesis: The Military's Encounter with Postmodernism"

Lieutenant Colonel Martha J.M. Kelley, USAF
(Air War College)
"Into the 21st Century: Solving the Air Force's Problems of Gender Differences and Leadership"

Captain Christopher P. McNamara, USN
(National War College)
"Breathing New Life into Dead Reckoning: A Proposal for the Next National Security Strategy"

Lieutenant Colonel David M. Riester, USAF
(Marine Corps War College)
"Spacelift: Search for a National Vision"

Lieutenant Colonel Mitchell S. Ross, USA
(Army War College)
"National Information Systems: The Achilles Heel of National Security"

Lieutenant Colonel Randal G. Tart, USA
(Army War College)
"Civil-Military Relations and General Maxwell Taylor: Getting it Right and Getting it Wrong!"

Colonel Cliff Tooley, USA
(Army War College)
"The Machine Nexus: Institutional Bias Against a Capabilities-Based Force"

JOINTNESS IN DEFENCE OF THE REALM

A Review Essay by
JEREMY R. STOCKER

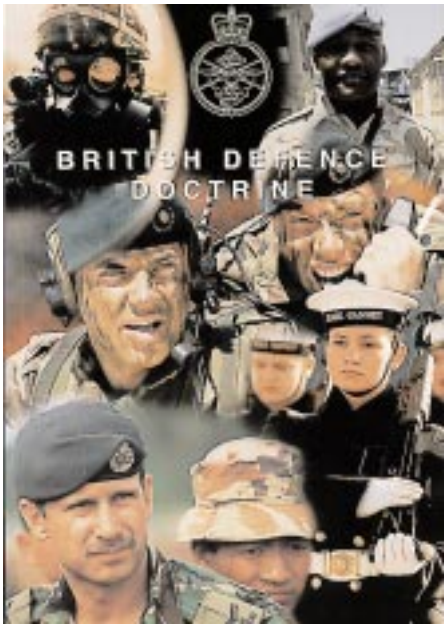
Joint Warfare Publication (JWP) 0-01, *British Defence Doctrine*
London: Ministry of Defence, January 1997. 178 pp.
[ISBN 0–85516–150–7]

Britain remains America's strongest and closest ally today. Increasing U.S. interest in the Asia-Pacific region and greater, if often reluctant, British involvement in Europe have not altered that strategic reality. Although no one can pretend that it is a relationship of equals, cooperation on intelligence, nuclear, and maritime issues is close. Many post-Cold War problems facing the U.S. military are echoed in Britain, though with a somewhat different geographic and cultural emphasis as well as a wide disparity of scale. Downsizing and jointness dominate British defense policy much as they do that of the United States.

In Britain, adjustment to the loss of empire and world power status brought about a defense policy closely focused on the security of Western Europe through NATO and the so-called "special relationship" with the United States. For the latter half of the Cold War, Conservative and Labor governments rested defense policy on four pillars: defense of the United Kingdom, a contribution to the defense of Western Europe (especially Germany), the security of the eastern Atlantic, and a separate nuclear deterrent based on the Polaris system. Residual out-of-area commitments (such as Hong Kong and the Falklands) and wider interests were covered by forces earmarked primarily for NATO. Defense spending as a proportion of GDP, though much lower than in the United States, remained consistently higher than in nearly any other European NATO nation.

Post-Cold War

Events since 1989 have brought a significant shift in British defense and security policies and in the forces intended to implement them. The late Conservative government introduced "front line first" that sought to maintain operational strengths as high as a falling defense budget allows, but at the expense of much support and training infrastructure. The drive for operational efficiency was given added impetus by the Defence Costs Study that has, among other measures, introduced commercial practices, devolved budgeting, and agency status to many support activities within the defense establishment. The defense budget has fallen steadily in recent years, representing about 2.8 percent of GDP today, down from nearly double that figure a decade ago. Military personnel have been reduced from nearly 300,000 to 214,000—half in the Army, the rest divided among the Royal Navy, Marines, and Air Force. Peacetime force commitments to the NATO Central Front in Germany have been significantly scaled down and will eventually include withdrawal of all fixed-wing aircraft to the United Kingdom.



Ministry of Defence

British defense policy now has a much more explicit world-wide emphasis than at any time during the last thirty years. Power projection and expeditionary warfare are back in vogue, having been taboo terms for many years. Force reductions have not hit the marines or airborne forces, and the Royal Navy's modest carrier force has not been affected by the cuts in the frigate/destroyer and submarine fleets. The Royal Air Force has enhanced and modernized air transport and tanker fleets. New amphibious ships, plans for larger replacement carriers and aircraft, and the purchase of Tomahawk missiles all demonstrate the new focus of defense planning.

NATO, however, remains the central focus of Britain's security. Changes as a result of the end of the Cold War have profoundly affected contributions to the Alliance. The commander and over 60 percent of the headquarters personnel of the new Allied Rapid Reaction Corps are British. Altogether, some 55,000 troops are assigned to this corps, principally l Armoured Division based in Germany and 3 Division (mechanized) in the United Kingdom. Danish, Dutch, and Italian units also come under those divisions when assigned. Britain also contributes 24 Airmobile Brigade to Multinational Division (Central).

Force Structure

These changes have led to the development of a regular force structure worth noting (see the accompanying figure). The reserve force of 60,000 personnel provide the Army with a further 70 regiments and battalions, and relatively few individuals supplement the regular Royal Navy and Royal Air Force, many of them specialists. Recent legislation updated the status of the reserves and gave the services greater flexibility in the call up of selected reservists in peacetime. Reserve personnel have recently been deployed operationally, notably in the former Yugoslavia and the Falklands.

By comparison, the division of tasks and assets among the British services is somewhat different from the U.S. military. Maritime patrol aircraft and support helicopters are, for purely historical reasons, flown by the Royal Air Force. In an era of increasing jointness this ought to be progressively less important, although it does impose a joint problem where (conceptually at least) none need exist. The disruption from any change of ownership of such assets probably outweighs likely gains. Britain does not have a coast guard, and management and control of offshore assets and responsibilities is a good deal less tidy than in the United States. Most patrol vessels (what the U.S. Coast Guard calls cutters) are operated by the Royal Navy, search and rescue helicopters by the Royal Air Force, and other assets by various government departments, civilian contractors, and even a charitable organization (the Royal National Lifeboat Institution). All (not just

Lieutenant Commander Jeremy R. Stocker, Royal Naval Reserve, is a postgraduate student at the University of Hull.

British Armed Forces

Army

- 41 infantry battalions
- 11 armored and armored reconnaissance regiments (900 tanks)
- 16 artillery regiments (530 guns plus MLRS)
- 10 engineer regiments
- 5 army air corps regiments (280 helicopters)
- 12 signals regiments
- 1 special air service (SAS) regiment
- 1 NATO corps headquarters
- 2 divisional headquarters
- 20 brigade headquarters

Royal Navy and Royal Marines

- 4 ballistic missile submarines (SSBN) with Trident D5
- 12 nuclear attack submarines (SSN)
- 3 V/STOL light aircraft carriers (CVSG)
- 10 amphibious and sealift ships (LPH/LPD/LSL/roll-on, roll-off)
- 35 escorts (DDG/FFG)
- 18 mine countermeasures vessels (MCMV), increasing to 25
- 19 fleet air arm squadrons (170 aircraft: Sea Harriers and helicopters)
- 1 marine commando brigade
- 5 special boat squadrons (SBS) plus afloat support, survey, and patrol vessels

Royal Air Force

- 18 attack and reconnaissance squadrons (Tornado/Jaguar/Harrier)
- 7 air defense squadrons (Tornado)
- 4 maritime patrol squadrons (Nimrod)
- 2 airborne early warning squadrons (E3D Sentry)
- 9 transport and tanker squadrons (Tristar/Hercules/VC10)
- 13 helicopter squadrons (Chinook/Sea King/Puma/Wessex) plus training, support, and surface to air missile (Rapier) units

some, as in the United States) afloat support ships and some amphibious ships, are civilian-manned, although hydrographic survey work is undertaken by the Royal Navy itself.

Doctrine

One growth area in British defense is doctrine. Traditionally a concept associated mainly with the Army, all three services have recently produced new or updated doctrine publications, followed now by the appearance of Joint Warfare Publication (JWP) 0-01, *British Defence Doctrine*. The introduction to JWP 0-01 explains the nature of doctrine and its place in the conduct of our business.

Doctrine is "that which is taught." It "is informative, whereas policy is essentially prescriptive." What is more it results from hard-won experience. Doctrine "is enduring" but "not unchanging." It underlies everything we do, from formulating policy and plans to executing tasks. It is, if you like, the philosophy of British defense. The publication attempts to bring together strategic and operational concepts common to all aspects using military force, introducing previously unfamiliar terms and ideas to each service. *British Defence Doctrine* inevitably has something of the feel of a basic text. That points to the roles of such a book: part of an officer's essential military education, a means to influence public, political, and academic opinion, and a medium for exercising influence abroad.

The second chapter of this joint publication examines the nature of war and armed conflict and reminds us that warfare is the essence of the profession of arms, but also that it is necessarily both a political act and a limited one. What we do is for political reasons and must be limited by political requirements, frustrating though that can be for the military mind. Moving to a description of strategy, JWP 0-01 discusses ends, ways, and means. These are essentially *what* is to be done, *how* it is to be done, and *what* instruments are to be employed. The political character of strategy is again stressed, particularly where international consensus and legality are essential. There are also short definitions of information warfare (IW) and command and control warfare (C^2W), but it is not altogether clear just what the difference is. Large portions of the respective definitions could be exchanged with no appreciable change in meaning. Although both subjects are very much part of warfare in the 1990s, no one in Britain seems to have firmly established what IW is that C^2W is not already. There is a short section on the politico-legal implications of targeting policy which, it is interesting to note, is to be retained on "the strategic level."

A chapter on security and defense ponders the relationship between these levels of activity. Security is concerned with territorial integrity and pursuit of legitimate interests at home and abroad whereas "defence policy supports security policy." It determines strategy and force planning and both protects and promotes security interests.

JWP 0-01 moves on to cover military capabilities by discussing the types of operations that the services may be required to perform. They include combat, deterrence, support to diplomacy, home defense, military aid to the civil authorities, noncombatant evacuations, humanitarian aid, arms control monitoring, and public and ceremonial duties. To mount this range of tasks, different categories of forces are used. Permanently committed forces are dedicated to their tasks on a day-to-day basis, such as nuclear deterrence. National contingency forces are tasked to meet challenges to national interests or to international peace and stability. Finally, there are forces for general war, a "regeneration and reconstitution" capability "within the warning time likely to be available." This must be of particular concern since "front line first" emphasizes the maintenance of forces in being at the expense of support infrastructure, which is precisely what is needed to "regenerate."

British policy features three defense roles in lieu of the four pillars of the late Cold War era:

- role one—ensure the protection and security of the United Kingdom and dependent territories even when there is no major external threat
- role two—insure against a major external threat to the United Kingdom and our allies
- role three—contribute to promoting the wider security interests of the United Kingdom through the maintenance of international peace and stability.

Each of these roles is broken into specific military tasks such as MT 1.7, the provision of military aid to the civil community; MT 2.4, air immediate reaction forces; and MT 3.7, the provision of a military contribution to operations under international auspices.

The seven mission types on which British forces may be employed in implementing these defense roles and tasks as outlined in the latest annual *Statement on the Defence Estimates* include:

- military aid to the civil authorities in the United Kingdom (such as Northern Ireland)
- internal and external security of dependent territories or overseas possessions (such as the Falklands)
- contributions to new NATO and Western European Union (WEU) missions (such as Bosnia)
- other military assistance and limited operations to support British interests and international order and humanitarian principles (such as Angola)
- a serious conflict (but not an attack on NATO) which could adversely affect European security, British interests elsewhere, or international security (such as the Gulf War)
- a limited regional conflict involving a NATO ally who calls for assistance under article 5 of the Washington Treaty
- general war—a large scale attack against NATO.

Gurkhas making house call at Camp Lejeune, CJTF '96.

U.S. Marine Corps (C.D. Clark)

Still under development, apparently with some difficulty, is JWP 0-10, *United Kingdom Doctrine for Joint and Combined Operations*, which will cover operational as opposed to strategic doctrine. On the tactical level, Britain has a good deal of joint doctrine and abundant procedures. In air defense, for example, the Royal Navy and Royal Air Force have worked closely together for many years, to some extent as a result of the demise of parts of naval air defenses when large conventional strike carriers were phased out in the 1960s and 1970s. Royal Navy antiair warfare destroyers and Sea Harrier-equipped light carriers are fully integrated into the United Kingdom Air Defense Region using NATO coordinated air-sea procedures developed and proven in Britain.

Joint rules of engagement have replaced the separate service rules of a few years ago. Aircraft procurement, maintenance, and training are increasingly coordinated among the services, with Royal Air Force fast jets (Harrier GR7s) operating today from a carrier (*HMS Illustrious*) in the Far East, alongside Royal Navy Sea Harrier F/A2s.

Joint Developments

The services have become increasingly coordinated and in some ways integrated over the last thirty years or so, a process that has accelerated in recent years for much the same reasons as in the United States. Separate government ministries (War Office, Admiralty, and Air Ministry) were abolished in the 1960s in favor of a single Ministry of Defence (the DOD level in American terms). The *purple* Central Staff has been progressively strengthened at the expense of service staffs, and the services lost their ministers in the early 1980s (who were equivalent to pre-1947 cabinet-level Secretaries of War and Navy in the United States), though the three service chiefs and their modest staffs have been retained to address service-unique matters. The Chief of the Defence Staff (a post equal to the Chairman, Joint Chiefs of Staff), is now principal military advisor to the government.

Britain does not have a system equivalent to the unified command plan in the United States because of its more modest force structure and regional commitments. In peacetime, each service has three commands to deal broadly with operations, materiel, and personnel. Control of operational forces, however, is almost totally joint. Prior to last year joint operations were run by whichever service headquarters was most appropriate. Recovery of the Falkland Islands, known as Operation Corporate, was controlled from Fleet Headquarters at Northwood, while Britain's contribution to Desert Shield/Desert Storm (alias Operation Granby) was conducted from Royal Air Force Strike Command Headquarters at High Wycombe. Such ad hoc arrangements were ended in April 1996 with the establishment of Permanent Joint Headquarters (PJHQ) at Northwood in the northwestern suburbs of London, which stands alongside the existing national and NATO maritime headquarters. PJHQ will predict, plan, and conduct joint (and contributions to combined joint) operations, using forces provided by the individual services. Moreover, PJHQ is responsible for developing joint warfare doctrine, procedures, operational standards, training, and exercises. To an extent, it may be seen as a single British equivalent of several unified commands under the U.S. system.

The principal tool of PJHQ is the newly-formed Joint Rapid Deployment Force (JRDF) that will fulfil a range of missions, mounted nationally or as a contribution to NATO, WEU, coalition, or U.N. operations. While no units are permanently assigned to JRDF, its core is 3 Commando Brigade of the Royal Marines and 5 Airborne Brigade from the Army, which incidentally were the principal land force elements in the Falklands campaign of 1982. Other assets will be drawn from the national contingency forces of all three services as required (such as a carrier task group or an armored division). Royal Navy amphibious lift (of broadly brigade-size capability) and the Royal Air Force's air transport fleet (mainly C–130s) are integral to the JRDF concept. Both PJHQ and JRDF were exercised last year during Purple Star in North Carolina.

This year also sees the demise of the individual service staff colleges, with the formation of the Joint Services Command and Staff College. Initially in temporary accommodation on the site of the old Royal Air Force Staff College at Bracknell to the west of London, it will eventually have a permanent home at Shrivenham in western England.

Technological Horizon

The RMA debate in America is being followed with considerable interest on the other side of the Atlantic. In general two themes dominate British and European views on RMA. The first is a somewhat skeptical view on the true impact and importance of new technologies in fundamentally altering the nature of war. European strategic and military cultures tend to be less technologically-focused and consequently give less weight to the significance of technology. On the other hand, there is increasing concern that if Britain is to continue to operate in the major league but cannot afford to develop or acquire new systems, it must at least do enough to maintain compatibility and connectivity with the U.S. military. Britain is probably better placed to

do this than many other U.S. allies which have even more modest defense resources and force structures.

On the related issue of defense cooperation, Britain continues to be torn between being the junior partner in transatlantic projects such as the joint strike fighter, and having a stronger but still minority role in European projects such as transport/tanker aircraft and the British-French-Italian Project Horizon for antiair warfare ships. While there are increasing political imperatives to joining European defense projects, the military and financial advantages of working with the United States remain considerable. Needless to say, Britain remains deeply suspicious of any European defense and security identity (ESDI) if it threatens to undermine NATO primacy.

It would be wrong to pretend that the British defense establishment is all one might wish. Resource constraints in recent years have been severe, and while the new Labor government has criticized aspects of the last administration's defense policy, including an overstretch of forces, it seems unwilling to do much about it. There will not be additional money for defense, and a further budget squeeze is quite possible. Labor promised a comprehensive defense and security review in its first six months, but broad support for the major tenets of the last government's approach has been expressed. These include maintenance of the nuclear deterrent, active involvement in U.N. and other peace operations, and an intervention/expeditionary warfare capability.

The British military has faced much change and turmoil in recent years, and consolidation is needed and promised. Some overdue rationalization of the defense establishment has certainly taken place, but there are concerns about some aspects of sustainability and regeneration capability. Interservice cooperation is greater and more effective than at any time in the past, although interservice rivalries can still be strong and active competition for scarce resources has certainly not gone away. Greater emphasis on jointness has not come at the expense of combined operations, and Britain's interaction with its NATO allies is undiminished.

JWP 0-01 elucidates the warfighting doctrine of the "other" half of the Anglo-American special relationship against a background of change in the defense establishments of both countries. As joint doctrine, this new publication should strike a familiar cord within the U.S. Armed Forces. JFQ

JOINT TRAINING FOR MOOTW

A Book Review by
SHAWN C. WHETSTONE

The Battle for Hunger Hill: The 1st Battalion, 327th Infantry Regiment at the Joint Readiness Training Center
by Daniel P. Bolger
Novato, Calif.: Presidio Press, 1997.
363 pp. $24.95
[ISBN 0–89141–453–3]

Actions placed under the nebulous rubric of military operations other than war (MOOTW) make up a rapidly growing share of missions conducted by the Armed Forces. U.S. intervention forces often find themselves in situations that intermix political and military objectives, combatants and civilians. How do soldiers prepare for these exigencies? *The Battle for Hunger Hill* provides an insight into the demands of MOOTW and their effects on the men and women who must conduct them. Drawing on the experience of leading an air assault infantry battalion through two rotations at the Joint Readiness Training Center (JRTC), Lieutenant Colonel Daniel P. Bolger, USA (currently an operations officer with the 101st Airborne Division) derives lessons on the nature of leadership and tactics required under such conditions.

Located at Fort Polk, Louisiana, JRTC is peopled with villagers, hunters, farmers, reporters, relief workers, and guerrillas who create a scene increasingly familiar to the U.S. military. This is the fictitious island of Aragon which is comprised of three countries: pro-American Cortina, neutral Victoria, and Marxist Atlantica. Conventional Atlantican government forces and guerrillas of the Cortinian Liberation Front provide the opposing forces. American intervention involves all services including close air support by the Air Force and naval gunfire which is targeted by Marine liaison teams.

It is into this setting that Bolger leads members of 1st Battalion, 327th Infantry Regiment in September 1994. The unit fights as an element of 3d Brigade, 101st Airborne Division. The book opens by reviewing the history, organization, and tactics of the combatants to set the stage for the looming action. It recounts both successes and failures impartially through the eyes of the author who indulges in no self-praise and offers no excuses.

By its very nature training cannot fully replicate the experience of life-and-death situations under live fire. However, units often become totally immersed in this exercise with the fear of failure providing some of the same edge. So too, the narrative often sweeps the reader along and assumes the intensity of combat history. Reality is not forgotten as the compromises necessary in a training environment are dealt with at appropriate times.

The title of the book is derived from the unit's first rotation. While actively seeking supply points one company discovered a large camp tentatively identified as the main guerrilla supply base. But the cache was actually an elaborate decoy to lure his unwary troops. Mortar fire began raining on the site. The guerrillas decimated the surprised company and severely hampered battalion efforts to recover their comrades. The location, named Hunger Hill by the unit, represented a situation that its soldiers did not want to repeat. It became a rallying cry for changes that were implemented as a result of lessons learned. In this and other battles during the rotation one senses the frustration of a conventional force fighting an elusive unconventional enemy.

Foremost among the lessons was a realization that often gets lost amidst other concerns and activities: the primary tasks for infantry are to control ground or kill the enemy. The latter became the unit's guiding principle and default mission.

Leaders implementing lessons from such an experience often do not have the opportunity to observe the fruits of their labors. Current personnel rotation policies and training center schedules rarely allow commanders to take their units through two rotations. However, Bolger and the 1/327 Infantry had that chance. Approximately nine months after their first rotation, the unit went back to JRTC to test new ideas and exact revenge on the Cortinian Liberation Front.

The second rotation featured different scenarios and missions. But the guerrillas remained and were ready to tangle with U.S. forces. From the start the battalion showed it had learned its lessons. Almost every organizational and tactical change improved their combat effectiveness. The reader detects confidence and

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a sense of accomplishment in turning the table on the guerrillas. More importantly, the second rotation both strengthens and gives credence to the book's observations.

The author's knowledge of military history offers unique insights which merge theory and praxis. He reviews the role of doctrine, personnel policies, the decisionmaking process, command and control, staff work, and fratricide. He does not claim to have solved the dilemmas that face commanders in MOOTW. Rather, his experiences demonstrate that neat school book solutions do not always fit messy real world situations. While that appears obvious, the day-to-day demands of commanding a unit often obscure that simple lesson.

The United States prefers utilizing firepower in dangerous situations rather than placing its soldiers, sailors, marines, and airmen directly in harm's way. JTFs can strike fear into the hearts of a would-be opponent. When it was able, 1/327 Infantry employed available air support and naval gunfire to devastating effect. But MOOTW will often involve enemies who are not as vulnerable to high tech. Such operations require troops who can handle complex problems, defuse violence, and fight unconventional forces while minimizing collateral damage as well as casualties. Resulting expectations and pressures can be tremendous. The Armed Forces must have experience to execute missions to the standards demanded by their leaders and the public. Just as the National Training Center proved its worth in the Persian Gulf War, JRTC is demonstrating its value in interventions by the Armed Forces in places like Panama, Somalia, and Haiti. The training is realistic and allows for mistakes to be made in acquiring the skills to execute increasingly complex missions. In relating his insights on gaining expertise in this regard, Bolger has written a book that both entertains and educates. For those who haven't been there or can't go, *The Battle for Hunger Hill* provides a taste of what it is like. JFQ

JFQ welcomes your letters and comments

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RIDING THE TOFFLER WAVE

A Book Review by
M.E. AHRARI

Creating a New Civilization: The Politics of the Third Wave
by Alvin and Heidi Toffler
Atlanta: Turner Publishing, 1995.
112 pp. $14.95
[ISBN 1–57036–224–6]

When one thinks of futurists who have depicted new vistas and written lively accounts of social and technological progress, the Tofflers—Alvin and Heidi—immediately come to mind. Their influence on the military is a tribute not only to iconoclasm but to the resolve of today's professionals in keeping abreast of technological revolutions in other sectors.

Just as the Nation as a whole cannot afford to take its eye off technological competition, the military comprehends the peril of becoming first among equals, much less second. The emphasis in professional military education is a persuasive indication of this thinking. Paul Kennedy's advise appears to have been taken to heart by both business and military elites: we do not wish to confront a decline in the economic realm lest it reduces our capacity to remain a superpower. The Tofflers began admonishing us along those lines years ago when they suggested a blueprint for avoiding "future shocks"—the disorientation caused by super change that the post-World War II period visited on the industrial sector.

Before examining *Creating a New Civilization: The Politics of the Third Wave*, it is helpful to review the earlier work by the Tofflers for two reasons. First, almost all their writing—notably *The Third Wave*, *Future Shock*, and *War and Anti-War*—has been studied by our military leaders. One of the major arguments in *The Third Wave* that impressed them was the idea that each wave of change brings with it a new kind of civilization. "Today we are in the process of inventing a third wave civilization with its own economy, its own family form, media, and politics." The military in the 1980s applied Tofflers' thesis to their profession. The third wave, they concluded, was also in the process of transforming war.

An obsession with lessons learned, especially from the Vietnam experience, also influenced the military in the early 1980s. Demoralization stemming from that war played a part in forward thinking among our best military minds. Thus the appearance of *The Third Wave* in 1980 served to assure many senior officers that they were on the right track about a technological revolution that would make the world a global village (not just metaphorically as was the case prior to the 1980s).

The second reason for reviewing the body of work by the Tofflers is that *Creating a New Civilization* summarizes their earlier books and advances a number of arguments initiated there. Still, those who have not read the other books may not be totally unfamiliar with the arguments in *Creating a New Civilization*, which though a short read at 112 pages is rich in content.

The theme of accelerated change found in *Future Shock* was developed in *The Third Wave*. The term *third wave*, according to the authors, "is not just a matter of technology and economics. It involves morality, culture, and ideas as well as institutions and political structure. It implies, in short, a true transformation in human affairs." The third wave is about the information revolution. Today, dictatorships and remaining Stalinist states—Cuba, North Korea, and to a lesser extent the People's Republic of China and Vietnam—are under tremendous pressure from within. The choices are stark: either change or be swept aside. The information revolution is no less challenging to democracies. Ruling elites can no longer govern on the basis of a "father knows best" approach, especially since arguments over social problems are becoming numerous and convoluted. A public glutted with information is increasingly impatient with its leaders.

War and Anti-War advanced an idiosyncratic proposition: "The way we make war reflects the way we make wealth—and the way we make anti-war must reflect the way we make war." In *Creating a New Civilization*, the Tofflers developed a "coherent approach" and a "new framework for change." The explosion of information is among other considerations revolutionizing markets and the nature of employment worldwide. While one may get nostalgic over the victory of capitalism and think glibly about the "end of history," we must be concerned with the potentially deleterious effects of

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growing competition among nations. Already we have been witnessing an increase in the formation of trading blocks. Where will this trend lead?

The Tofflers touch on this issue in discussing the move from a "bisected" to a "trisected" world. In the latter, the first wave sector supplies agriculture and mineral resources. Cheap labor and mass produced goods come from the second wave sector, while dominance by the third wave sector is "based on the new ways in which it creates and exploits knowledge." They unequivocally state that the "globally competitive race will be won by the countries that complete their third wave transformation with the least amount of domestic dislocation and unrest." This prognosis does not bode well for the rest of the world.

The authors also predict that "historic change from a bisected to a trisected world could well trigger the deepest power struggles on the planet as each country positions itself in the emerging three-tiered power structure." So how should we manage the race among second wave countries to join the ranks of the third wave? Is there any way of ameliorating the effects of the competition? The authors do not say. My hunch is that they would opt for social Darwinism.

An engaging problem raised in the book is "conflict between the second and the third wave groupings" in the United States. Who will "shape the new civilization rapidly rising to replace it?" The way this conflict will be resolved in America is significant. However, it is equally important to apply this question to domestic scraps between different generations of leaders in European and Asian nations. Erstwhile members of the former Warsaw Pact are likely to experience similar conflicts in a decade or two as they rebuild institutions on the pattern of the Western democracies. But the countries of the Balkan region, most of the Commonwealth of Independent States (CIS), the Caucasus region, Middle East, Africa, and South America will have to wait several decades to answer this important question. It is safe to speculate that although a new generation of leaders in many countries has grown up in the second wave, its thinking might be colored by an exposure to the third wave era in the age of electronic communications. This generation is bound to respond quite differently to social changes than did its immediate predecessor.

In the 1990s and beyond both rulers and ruled will probably behave unlike their forefathers of the second wave. Will this be a change for the better? Some developments are not promising. The rise of ethno-nationalism in Europe, Asia, and Africa; religious extremism in the Middle East, South Asia, and Africa; weakened governments in some Third World countries (states belonging to the first or second wave) suggesting to some the end of the nation-state—these are examples of what we will witness with the revolutionary changes of the third wave.

The remainder of the analysis is focused on U.S. political battles of the 1990s. They label opponents of the North America Free Trade Agreement—paragons such as consumer advocate Ralph Nader and columnist and perennial political candidate Pat Buchanan—as second wave figures while Vice President Al Gore has "one toe wet in the third wave." The bureaucracy and civil service are derided as second wave entities that are "largely unreformed, unreengineered, unreinvented." The last phrase refers to efforts by Mr. Gore to "reinvent" (read: fix or make efficient) government.

The 1996 election had its share of "wave-related" rhetoric like Clinton's harping on designs to build a bridge to the next century, portraying his candidacy as part of the third wave. At the same time, in a not-too-veiled reference to his opponent, Clinton questioned the "age of his ideas," implying that the Dole campaign was characterized by "second wave ideas."

Second wave elites are struggling "to retain or reinstate an unsustainable past because they gained wealth and power from applying second wave principles, and the shift to a new way of life challenges that wealth and power." Moreover, both political parties "reflect second wave." But the brunt of criticism is borne by the Democrats whose core constituencies—labor unions, the civil service, etc.—make it unable to follow its most forward-thinking leaders.

According to the Tofflers, third wave constituencies encompass "industries based on mind work rather than muscle work," which includes data-enriched services such as finance, software, communications, entertainment, medicine, and education. The authors believe these sectors will agree on "liberation from all the old second wave rules, regulations, taxes, and laws laid in place to serve the smokestack barons and bureaucrats of the past." Third wave activist citizens, politicians, and policymakers will assess proposals for change based on the following:

- Does it resemble a factory (symbol of the second wave)?
- Does it *massify* society (an apparent reference to mass production and assembly lines, mass education, masses, and mass media, all symbolizing the second wave)?
- Does it promote vertical organizations (second wave) or *virtual* organizations (third wave structures that parcel out services and stay slim)?
- Does it empower the home? Demassification will enable many people to work at home using computers, facsimiles, and other third wave technologies.

In their conclusion the authors offer some principles of third wave government. The first wave was characterized by "minority power" and the second operated on the basis of majority rule since it "almost always meant a fairer break for the poor." In countries undergoing the third wave revolution, the poor are no longer in the majority, according to Tofflers. "In a good many countries, they—like everyone else—have become a minority." Consequently, majority rule is not only inadequate as a legitime principle in societies moving into the third wave; it is no longer necessarily humanizing or democratic. On this point perhaps they are so focused on the future they ignore current realities. Recent reports indicate that the level of poverty in the United States has increased. Thus it is hard to imagine that the poor will become a minority any time soon. The record of other industrialized countries cannot be that much better. The Tofflers also recommend the modernization of the entire American system "so as to strengthen the role of the diverse minorities. . . ."

Their second proposal is "semi-direct democracy," a mix of direct and indirect democracy. Thirdly, to break the decision logjam they propose dividing and reallocating decisions by "sharing them more widely and switching the site of decisionmaking as the problems themselves require." Interestingly, the Republican "Contract with America" considered such suggestions. By devolving Federal power to state governments and emphasizing the role of the private sector in many issues, the Republican majority in the 104th Congress activated the "semi-direct democracy" and attempted to avoid decision logjam. However, whether these attempts will bring about qualitative changes or accelerate America's progress as a third wave society has yet to be seen.

The "super struggle" between efforts to preserve second wave societies and efforts to create third wave ones is unlikely

to end soon. As the Tofflers see it, "creation of new political structures for a third wave civilization will not come in a single climactic upheaval but as a consequence of a thousand innovations and collisions at many levels in many places over a period of decades." The fact that the thrust of *Creating a New Civilization* deals with political, social, and technological change suggests that the United States will remain in the vanguard of the third wave. If indeed technological innovations substantially determine the future of this civilization, then America will be in the forefront. But the Tofflers argue that the third wave involves more than technology and economics. "It involves morality, culture, and ideas as well as institutions and political structure." But this definition compels us to search for this civilization around the world.

One reason for the increased number of conflicts in the post-Cold War world is the level of strife involving first or second wave states. Weakened nations in Africa underscore the inability of some societies to pull themselves out of the first wave and into the third with only a brief transition in the second. Little attention is paid to the regional security implications of such a conversion.

At least some interest is being shown in countries that are scrambling to pull themselves out of the second and into the third wave. We have witnessed shock waves created by such endeavors in Russia, where the government is struggling to maintain its influence after undergoing a radical shift from control of an empire to confronting the multifaceted challenges of the information age. Other CIS states are bound to undergo cataclysmic changes in their efforts to emulate the industrial democracies of the third wave, especially the United States, Japan, and Germany. The impact of such changes on European security will be considerable.

In the Middle East, the transition from the first or second to the third wave is complicated by Islam. Some analysts treat the role of Islam in a superficial and misinformed way by casting it as an obstacle to modernization. Because a transition from the first to the third wave era promises to modernize societies, one can apply this negative argument and take the position that Islam would oppose such changes. In reality all Muslim countries in the 1990s are coming to grips with how to modernize without Westernizing. Put differently, these societies are caught between adopting the technological but not the cultural aspects of the second and third waves.

The ultimate influence of the Tofflers' work on the profession of arms and of the third wave on the future of war cannot be known. But one has only to note the petulant title of the preface to this slim volume ("A Citizen's Guide to the Twenty-First Century") and its author (Newt Gingrich) to appreciate that its potential audience is legion. JFQ

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